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GOVT PUBNS

ENVIRONMENTAL ASSESSMENT REVIEW PANEL

IN THE MATTER OF AN APPLICATION BY FOOTHILLS PIPE
LINES (YUKON) LTD. TO THE MINISTER OF INDIAN AFFAIRS
AND NORTHERN DEVELOPMENT FOR A GRANT OF THOSE
INTERESTS IN THOSE AREAS OF TERRITORIAL LANDS IN THE
YUKON TERRITORY AS MAY BE NECESSARY FOR THE CONSTRUC-
TION AND OPERATION OF THE SAID NATURAL GAS PIPELINE
AND THE WORKS AND FACILITIES CONNECTED THEREWITH AND
INCIDENTAL THERETO,

AND

IN THE MATTER OF A PANEL TO REVIEW THE ENVIRONMENTAL
ISSUES RELATED TO THE PROPOSED ALASKA HIGHWAY GAS
PIPELINE.

THE CHAIRMAN: DR. H.M. HILL

MEMBERS: DR. O. HUGHES
MR. L. CHAMBERS
MR. B.J. TREVOR
MR. C. WYKES
DR. D. IACATE

P R O C E E D I N G S

VOLUME 3

CANADIAN ARCTIC
GAS STUDY LTD.

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WHITEHORSE, Y. T.

JUNE 15TH, 1977

1 Whitehorse, Yukon Territory

2 June 15th, 1977

3
4 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

5 MR. CHAIRMAN: I would like to
6 open proceedings for today.

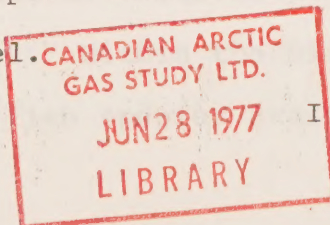
7 First on our list is Mrs. Ernie
8 Watson. Is she here? No, well we'll see if we can fit Mrs.
9 Watson in later.

10 Is Mr. Jacobson here? Would
11 you please give your brief.

12 You haven't met the panel before,
13 I guess. On my far left is Brian Trevor. Next to him is
14 Lynn Chambers, Owen Hughes, Doug LaCate on my far right,
15 and Colin Wykes. I am Harry Hill, and our procedures for
16 operation are that you give your brief and it is followed
17 by questions from the panel, and the panel staff, statement
18 by Foothills, questions from the floor, and the panel reserves
19 rights to ask questions at any stage, except when you are
20 giving your brief, of course. Okay?

21 MR. JACOBSON: My name is Gerald
22 Jacobson. I'm a principal of Inter-disciplinary Systems in
23 Winnipeg, and I was study director on the initial environmental
24 evaluation report that we conducted for the Alaska Highway
25 Pipeline Panel.

26 I would like to briefly review



1 the procedure that we went through to select the environmental
2 parameters we included in our report. I would like to just
3 briefly discuss those parameters, and then I would like to
4 read a short statement that the Panel asked me to read to you
5 for that.

6 Any comprehensive environmental
7 impact assessment requires three major objectives, I think.
8 One is the systematic framework from which you can quickly
9 move in and identify the major impacts and refine those
10 impacts and address them. Another factor is that the ability
11 to incorporate objective factual information together with
12 subjective value judgments into the impact assessment. The
13 third is to put those two together and present them in a
14 manner that's meaningful for the decision-makers.

15 In the initial environmental
16 evaluation that we prepared, we considered the environment
17 of the southern Yukon in the pipeline corridor is consisting
18 of physical, biological, and human component.

19 Within these three categories,
20 we further broke them down. For example in the physical
21 category in to land, water and air, as the major components.
22 And in the biological category in to mammals, birds, fish and
23 vegetation. Beyond that, the selection of key parameters
24 within each one of those components becomes a little more
25 difficult task. Within the biological component there is
26 about thirty fish species available along the route. There's

1 about fifty mammal species, and there is about a hundred and
2 eighty bird species. It's impossible to adequately address
3 all those species.

4 Selection of key parameters is
5 a very critical phase in environmental impact assessment
6 because it defines the boundaries of the concern of the
7 assessment, and to a certain extent it shaped the nature of
8 the final assessment, because inclusion of a parameter in to
9 the assessment implies that under certain circumstances,
10 adverse impacts to that particular parameter are unacceptable
11 and exclusion from a parameter from consideration implies
12 that any impacts that would occur to that parameter are, in
13 fact, acceptable.

14 In our selection process, we
15 basically went through two stages. The first stage was
16 to review all the available parameters, to check them against
17 the project and look for potential conflicts. Any parameters
18 that showed potential conflicts were checked against a set of
19 six criteria to see if they should be included in to the
20 environmental assessment. The first criteria was; does the
21 parameter have limited regional or continental occurrence?
22 The second criteria was; does the parameter have a restricted
23 regional or continental distribution? The third was; does
24 the parameter have sensitivity to disruptions? The fourth;
25 is the parameter unadaptable to disruptions? The fifth; is
26 there any direct or indirect use of that parameter by other

1 portions of the environmental system. For example, beaver,
2 muskrats, and the trapping system. The sixth one was; is
3 the parameter of special public or institutional interest?

4 Following the selection of the
5 parameters in our evaluation, the study came as a group,
6 assigned relative importance rank as to all the parameters
7 on the understanding that, of course, they are not all
8 equally contributing to the environmental system. These
9 importance ranks were assigned by the group on the basis of
10 the above six criteria. Our definition of the importance
11 ranking is that these rankings for each parameter reflect
12 the relative contribution of each parameter to maintaining
13 the function and stability of existing natural and social
14 system of the region.

15 The final set of environmental
16 parameters is shown on page five of the initial evaluation.
17 The study team assigned a total of a thousand relative
18 important points to the evaluation. Four Hundred and forty-
19 four of which were assigned to the human environment, three
20 hundred and fifty were assigned to the biological environment,
21 and two hundred and sixty were assigned to the physical
22 environment.

23 Within the physical environment,
24 water was considered the most important component, and was
25 assigned 89 points, land was considered slightly less
26 important and assigned 83 points, and air was considered the

third component, and assigned 34 points.

Within water, sanitation was considered to be the most important parameter, assigned 32 points. Water quality next, assigned a value of 32 points. Ground water regime, assigned a value of 17 points, and surface water regime, assigned a value of 8 points.

Within land, permafrost was considered to be the most important parameter, and assigned a value of 39 points. Erosion, second, assigned a value of 31 points, and slope instability, third, assigned a value of 13 points.

Air, with a total of 34 important points, was equally divided between our quality and life requirements.

In the biological environment, the total of 350 points were assigned first to mammals as the most important components with 118. Birds were considered slightly less important with 107 points. Fish were assigned 83. Vegetation was assigned 42.

Within mammals, Dall sheep were considered the most important parameter and were assigned a value of 32 points. Grizzly bears assigned a value of 25. Wolverine, wolf and woodland caribou were considered of equal importance and assigned values of 15. Elk and mule deer were considered about half as important and assigned a value of 8. Moose and aquatic rivers assigned a value of 4 each.

25 Now I recognize that these
26 relative importance rankings are assigned by our study team,

1 and don't necessarily imply any real value in terms of other
2 people's perceptions of how those things should be ranked.
3 But I think the important point that we tried to get across
4 is the procedure that we have outlined in laying out parameters,
5 laying out a procedure for assigning relative importance,
6 combining that with magnitude and likelihood of impact and
7 doing assessment of the environmental impact.

8 So, in conclusion I would say
9 that these relative importance rankings and combination of
10 the magnitude and likelihood of impacts provides the basis
11 for evaluating the relative impacts to the key parameters,
12 components and categories of the environment as it relates to
13 the gas pipeline.

14 It is our recommendation therefore,
15 that the parameters outlined here should be the minimum set
16 of environmental set of parameters addressed by this Inquiry.

17 That constitutes my statement on
18 that particular subject. Now, if you don't mind, I would
19 read the statement for the panel, or would you like to hear
20 that a little later.

21 MR. CHAIRMAN: Please continue.

22 MR. JACOBSON: This is
23 entitled: "Dempster Highway Statement", from the Alaska
24 Highway Pipeline Panel, dated June 14th, 1977.

25 "We recognize that the
26 national decision on a gas pipeline through the western Arctic

1 may be made before all possible routes have been thoroughly
2 examined. One of these routes is along the Dempster Highway.

3 We feel that these hearings must
4 address the available information on the Dempster Highway
5 since a lack of discussion could be interpreted as tacit
6 approval of the route. Until such time as adequate studies
7 are available, it is our view that it would be inadvisable to
8 attempt a decision as to whether the Dempster Highway route
9 or the Mackenzie Valley route would be preferable for
10 bringing Delta gas to southern markets. Our reasons are
11 as follows:

12 One. There is an alternative to
13 the Dempster Highway in the Mackenzie Valley route. However,
14 we agree with Mr. Justice Berger where he stated in the
15 conclusion of his report:

16 "Time is needed to settle native claims, set
17 up new institutions and establish a truly
18 diversified economy in the North."

19 He estimated that this would
20 take ten years and we respect his judgment. Whether the
21 Mackenzie route is better or worse than the Dempster, we do
22 not know; but the option is available.

23 Two. Virtually no research is
24 available on the environmental setting of the Dempster route,
25 the project description, or the anticipated impacts.

26 Point number three. Introduction

1 of a large number of pipeline workers (as well as others
2 who will follow) along a public road would likely cause
3 serious, and what is to us unacceptable, change. Not only
4 the pipeline workers but the improvement to the road and
5 facilities would add additional risks.

6 The Porcupine caribou herd is
7 endangered by the very presence of the Dempster Highway.
8 Any large influx of people, many of whom could not be
9 controlled by the pipeline company, could cause depletion or
10 alteration to the herd or it's migration patterns.

11 The Porcupine caribou herd is
12 a valuable, continuing source of food as well as a rare,
13 natural phenomenon that should be preserved for scientific
14 and cultural values. It is inextricably linked with the
15 culture of the native peoples in both the Yukon and the
16 Northwest Territories. Carbon dating of a skin scraper made
17 from a caribou bone shows that the people of the Old Crow
18 area have been using caribou for 30,000 years. We must not
19 risk the destruction of this cultural link with the past.

20 In conclusion, we feel strongly
21 that these hearings must address the environmental implication
22 of the Dempster Highway to avoid approval of the route by
23 default. Because of the lack of available information,
24 however, we strongly oppose acceptance of the Dempster Highway
25 as a viable alternative for the movement of Mackenzie Valley
26 gas at this time. If, at a later date, it can be proven that

1 a pipeline along the Dempster Highway is acceptable to
2 Canadians, including the native people affected by the route,
3 we would reconsider our position on this issue.

4 MR. CHAIRMAN: Thank you very
5 much. I understand Mrs. Ernie Watson has arrived. Would
6 you identify yourself please?

7 I realize you were first on the
8 agenda, you weren't here so we started with the next
9 participant. Would it be okay if you followed him this
10 afternoon? Okay. Thank you.

11 A matter of clarification for
12 people not familiar with the initial environmental evaluation
13 spoken of. This is this blue document which I hold in my
14 hand, and I would like to ask if you are willing to answer
15 questions on the substance of this document, as well as
16 your brief?

17 MR. JACOBSON: I came prepared
18 to present the information on the parameters and I don't
19 think I can speak for the Alaska Highway Pipeline Panel on
20 subsequent issues of the impact. But I am certainly
21 prepared to look at some of the questions. I was study
22 director on the project and I didn't do any -- I did not
23 personally do any of the individual sections, so, under those
24 conditions I would be certainly willing to answer questions.

25 MR. CHAIRMAN: How would you
26 suggest we approach the problem of technical questions on

1 particular aspects? Would you prefer these are addressed to
2 the authors, through yourself in writing, or -- ?

3 MR. JACOBSON: Certainly could
4 do that. I could attempt to answer as many of them as
5 possible, and the other ones I couldn't I could pass on to
6 the authors.

7 MR. CHAIRMAN: Okay. The other
8 point is that in July we expect that the panel will want to
9 enquire deeply in to certain aspects, and would it be possible
10 to have some of those authors available to participate at
11 that time?

12 MR. JACOBSON: Absolutely.

13 MR. CHAIRMAN: Okay, thank you.
14 Are there questions from the
15 panel?

16 MR. JACOBSON: Maybe I should
17 run back and get my copy.

18 MR. WYKES: In your brief on
19 the Dempster Highway, or your Dempster Highway Statement, you
20 suggest that the caribou along the Dempster should be
21 preserved for scientific and cultural values. Would you
22 define what you mean by scientific and cultural values there
23 please?

24 MR. JACOBSON: I'm sorry, I am
25 presenting this brief on behalf of the panel, but I really
26 can't speak for them on this particular statement.

1 MR. TREVOR: I wonder then, if
2 it would be possible for you to even elaborate on the last
3 two paragraphs of this brief, wherein it stated that this
4 panel should address the environmental implications of the
5 Dempster Highway. It then goes on to suggest very strongly
6 that indeed no decision be made for either one route or the
7 other. These two paragraphs in my mind seem to conflict
8 somewhat with each other.

9 It would be difficult, I think,
10 for the panel to address itself to the Dempster Highway and
11 then not come up with an opinion, and yet your final
12 paragraph tends to suggest that an opinion shouldn't be
13 stated at this time.

14 MR. JACOBSON: It is my
15 interpretation from reading it, that the intent is that the
16 panel address the Dempster Highway, so that the issue is not
17 forgotten.

18 MR. TREVOR: In terms of
19 identifying the concerns that are present?

20 MR. JACOBSON: Right.

21 MR. TREVOR: Thank you.

22 MR. JACOBSON: But at that point.

23 MR. CHAIRMAN: Could you tell
24 me how the rankings you assigned to the parameters influenced
25 recommendations? Or did they simply influence the selection
26 of parameters to be considered?

1 MR. JACOBSON: On how they
2 influenced recommendations?

3 MR. CHAIRMAN: That's right.

4 MR. JACOBSON: The rankings
5 were assigned at the outset of the study. Before we had gone
6 in and done any of the impact analysis work. I think that's
7 an appropriate way of doing it. I think this is the relative
8 importance of those parameters to each other, independent of
9 what's going to happen to them. The way we set the system
10 up, changes to the environment, changes to those parameters
11 were defined in terms of magnitude of change, likelihood of
12 change, and a combination of those two with the relative
13 importance was used with it as an environmental assessment
14 index to indicate relative levels of change between parameters
15 within components and between different components.

16 Now, from that standpoint, the
17 higher the relative importance and combination with some level
18 of potential change, would generate a fairly high environmental
19 assessment index and the recommendations were in fact centred
20 around the parameters that had the highest environmental
21 assessment indexed values. In some cases, recommendations for
22 controls mitigated measures could reduce that index value;
23 in some cases it couldn't. So there was a connection.

24 MR. CHAIRMAN: Right, okay.

25 Mr. Hughes?

26 DR. HUGHES: In the section on

1 water, there's the subsection on ground water that deals with
2 water supply from wells and so forth and it's importance in
3 that regard. I don't see anything with respect to the problems
4 that commonly arise, or did arise with the construction of the
5 Alaska Highway, formation of icings, due to disruption of this
6 water seepage. Did you consider this problem, or did you
7 consider it and decide that it wasn't an environmental
8 problem?

9 MR. JACOBSON: I'm a wildlife
10 biologist. Dr. Ken Adam wrote that section. He's aware of
11 what you spoke of, because I talked to him about it. I
12 would have to pass that question on to him.

13 DR. HUGHES: But I could be --
14 you know, we're trying to define the relative levels of
15 concerns and any advice that we could have on whether that --
16 whether we should pursue that at all would be helpful.

17 MR. CHAIRMAN: I have another
18 question, on the Environmental Protection Board as I remember,
19 made recommendations concerning review and surveillance
20 agencies, or agency with regard to the construction of a
21 Mackenzie Valley gas line, and I notice in this environmental
22 evaluation, that that aspect was not addressed. Could you
23 tell me if in fact the Board on the panel now would -- will
24 be addressing that issue, or whether they have an opinion
25 about the application of their last recommendations concerning
26 the Mackenzie Valley pipeline on this situation?

1 MR. JACOBSON: It is my
2 understanding that they will be addressing that issue. It
3 was discussed at the human environment hearing, socio-economic
4 hearings, and it's my understanding that the panel is trying
5 to bring the level of information in the assessment and
6 in their work for the socio-economic aspects up to the level
7 of the environmental information, and at that point put it
8 together in some sort of regulatory agency context. It is
9 my understanding that they are going to address it.

10 MR. CHAIRMAN: Could you give
11 us an idea of time table? As you know we must address govern-
12 ment ourselves on August 1st, and we will be starting
13 hearings again after this week on July 5th.

14 MR. JACOBSON: I would have to
15 respond to that in writing.

16 MR. CHAIRMAN: Okay, thank you.
17 Are there any questions from
18 staff? Dr. Beanlands?

19 DR. BEANLANDS: I take it that --
20 I would like to pursue for a short time, this ranking system.
21 I have ~~difficulty in understanding it~~ from the point of view
22 of the impact of the pipeline. For example, over the last
23 two or three days, we have discussed at some length with
24 Foothills' representatives and certainly among ourselves,
25 the permafrost component, particularly on the western end
26 of the line.

1 Do you think that a value of
2 39 out of a total of 1,000 indicates the importance of
3 permafrost difficulties encountered in running a line?

4 MR. JACOBSON: If you remember
5 in the procedure that we outlined in assigning the rankings,
6 it was done in a very structured hierarchial fashion. The
7 1,000 points were first distributed between the physical,
8 biological and human. So, at that point, we had 206 points
9 to work with in the physical environment. Then the 206 points
10 were assigned to land, water and air. And we had 89 to work
11 with on the land component. Now, of that 89, no excuse me,
12 83, -- of that 83, half of them were assigned to permafrost.

13 It's difficult because of the
14 way we established the rankings to say how does permafrost
15 relate to archeaological sites? That comparison was never
16 made. When the rankings were assigned in the land section,
17 the process as outlined in our report says "permafrost is
18 ranked as the most important parameter in land, erosion is
19 ranked as the second most important parameter," and the
20 values were assigned saying how important is erosion to
21 permafrost. Then the next level of comparison was how
22 imporant is slope instability to erosion, but permafrost
23 and slope instability were never directly compared. It a
24 paired comparison as you go down the ranking list.

25 DR. BEANLANDS: In other words,
26 what you are saying is, is that we cannot compare the

1 importance of permafrost to any of the other physical,
2 biological, or human components?

3 MR. JACOBSON: No, you certainly
4 can. You can compare permafrost to all the other land
5 parameters, and you can look at it in perspective of land
6 compared to water. But, it's a tree structure, if I make
7 that clear.

8 DR. BEANLANDS: But, surely
9 another way of approaching it would be that in the whole ar-
10 ray of parameters that are important to the construction of
11 the Alcan pipeline, surely there are certain key factors
12 which are so important they would override considerations
13 of other parameters? Now how was your arranging system going
14 to provide the panel with some indication of the overriding
15 factors? You can lose the muffler off the car and keep on
16 going, but you can't go very far without any gas.

17 MR. JACOBSON: Absolutely not.
18 I think -- we were talking about the relationship of
19 permafrost to erosion of slope instability in terms of an
20 overall system. When you start talking about building the
21 pipeline in permafrost as being a serious problem, in some
22 cases it is a serious problem. There is no doubt about it,
23 and it requires a great deal of investigation.

24 To say that it should be the
25 overriding consideration and get sixty per cent of the points,
26 I don't know. This after all, is our study teams' evaluation

1 of the system, and from the Inquiry standpoint, you could
2 certainly use the same sort of procedure that we used to
3 establish your own set of rankings, because the procedure
4 is outlined.

5 The important thing there is
6 putting it in perspective with the other impacts. Hopefully
7 our assessment of the magnitude of the problem would be
8 very similar to yours. Then it becomes a matter of your
9 perspective versus our perspective in terms of importance
10 of that particular parameter.

11 I'm not implying that these
12 are final importance rankings that should be used forever
13 on impact assessments. They are our interpretation.

14 DR. BEANLANDS: I'm not sure
15 you answered my question, but I think I'll leave it sit there.

16 MR. SCHILDER: Mr. Jacobson,
17 I would be pleased if I could have some supplemental question.
18 I found your organization and ranking system of environmental
19 parameters interesting. However, I must say that up to now,
20 I haven't found a way of benefiting from it.

21 Let's have a look at your
22 table which indicates that you have used in your assessment
23 for parameters, that's the way you call them, for water.
24 You are using specifically sedimentation, water quality,
25 ground water regime, and surface water regime. I have some
26 reservations in principle against using these parameters

1 solely without any comment, because in general I think it's
2 understood that surface water regime must, of course,
3 include water quality in general, and so does the ground
4 water regime. I'm not sure what is, in principle, meant by
5 sedimentation, whether you meant really a process, or
6 whether you meant a specific parameter of water quality, but
7 I assume from the further content of the report that you
8 meant rather a specific parameter of water quality, which
9 is usually expressed in milligrams, well, liter, or parts
10 per million.

11 I found that use of these
12 four parameters highly unbalanced, quite confusing, and as
13 I said, I would appreciate any comment, your explanation
14 on the subject.

15 MR. JACOBSON: Sedimentation
16 was intended to be -- your latter definition of indicator
17 of water quality as a parameter water quality. It was
18 separated out from the other indicators of water quality
19 because of what we considered to be important in pipeline
20 construction in this particular area.

21 Your mention of ground water,
22 I think the way he defined ground water problems during
23 construction was it's effect on the availability and quality
24 of ground water to down slope users. During operation he
25 defined it as the problems associated with ground water flow
26 from the buried pipeline. So he has used it I guess, in two

1 different manners, depending on what the related project
2 problems are.

3 MR. SCHILDER: Well, I feel in
4 general, that this is, in my interpretation, not the strongest
5 part of the report. I don't want to be highly critical over
6 that. I appreciate a tendency to classify various
7 environmental potential or probable impacts, however, I feel
8 that this is far more complicated question which has not been
9 solved to my knowledge, acceptably yet, and probably is not
10 going to be solved for a long time.

11 As my colleague pointed out, it
12 is hard to believe, or it's almost impossible to make
13 similar comparison as he did that significance of surface
14 water regime would be exactly the same as the significance
15 of Arctic greyling, which is classified in both cases at
16 8 points, and so on. I should stick certainly with water
17 aspects, but I feel that rather another philosophical
18 approach would probably be more successful, because if we are
19 serious about protecting Arctic greyling in that case it may
20 be, in some cases, significant factor in our environmental
21 protection, and regardless your rating here, it may be in
22 some cases a must to protect it at any rate. Would you agree
23 with that?

24 MR. JACOBSON: Would you repeat
25 that please? Just the last part?

26 MR. SCHILDER: I tried to make a

1 point perhaps not quite elegantly, but I tried to make an
2 example that if we are concerned with a specific species of
3 fish, like Arctic greyling, in a specific stream, and if you
4 are determined to protect that fish, regardless^{of}/your rating
5 here, we have to do all precautions in design or construction
6 and operation in order to protect that species and it may be
7 a must regardless whether your rating here is 8 or 7 or 70.

8 MR. JACOBSON: Absolutely, I
9 agree. You must remember that this was developed last fall,
10 under a fairly short time frame, and it is an initial
11 evaluation. I recognize the problems that you mention in
12 water in terms of it's a more complicated problem that what
13 we have tried to simplify it to.

14 I think we approached it from
15 the standpoint that it was a big problem to start out with
16 and we had to take off pieces that we thought we could
17 handle, and handle reasonably and work on those recognizing
18 that there was lots of other implications related to all the
19 problems that we were discussing, and that we weren't by
20 any stretch of the imagination making the final statement on
21 what was going to happen.

22 MR. SCHILDER: I personally was
23 not confused by that type of approach, but I only, as I said,
24 I am repeating myself, sorry about that, if you feel badly,
25 but I haven't been able to benefit from that rating. I am
26 afraid that certain type of readers may be confused.

Mr. B. Lister
Mr. G. Jacobson
Dr. Beanlands

309

1 MR. CHAIRMAN: Mr. Lister?

2 MR. LISTER: Mr. Jacobson, I

3 have a rather specific question relating to the water
4 section of your report, pages 81 to 83, in which your
5 staff concluded that construction camp locations; four of
6 the six sites proposed by Foothills were in danger of
7 causing water quality impairment on the rather small drainages
8 on which they were located.

9 I just wondered if anything had
10 come to light between the time that you published this
11 report and the present that would change your conclusions
12 on that?

13 MR. JACOBSON: To my knowledge
14 no, but I would have to ask the author of this section.

15 MR. LISTER: Okay, thank you.

16 MR. CHAIRMAN: Dr. Beanlands?

17 DR. BEANLANDS: I have one
18 further question, Mr. Jacobson. It refers to section on
19 "Unavoidable Change"; getting back to the permafrost problem.
20 There are a number of remedial, or protective measures
21 listed on the top of page 142, and then at the bottom it says
22 that "the foregoing recommendations should provide a fair
23 degree of protection to the peat cover and reduce the
24 potential change during the construction period from 9 per
25 cent to about 5 per cent." What does that mean? Five per
26 cent of what? What's an acceptable percentage?

1 MR. JACOBSON: The 9 per cent
2 and the 5 per cent are -- I was thinking of going back to
3 the definition.

4 DR. BEANLANDS: Bear in mind
5 that I'm asking you the question after having read the
6 definition.

7 In your own words, what does it
8 mean to reduce it from 9 per cent to 5 per cent?

9 MR. JACOBSON: My interpretation
10 is that 9 per cent means that there will be subsidence
11 greater than one-third meter over 9 per cent of the length
12 of the route -- the linear length of the route. With the
13 establishment of controls the subsidence will be reduced
14 to 5 per cent of the linear length of the route.

15 DR. BEANLANDS: Is there any
16 indication of what is an acceptable percentage?

17 MR. JACOBSON: He has given no
18 indication in there what is acceptable. I think his
19 definition of a third meter is based on beyond that point.
20 It will require remedial work to reduce it beyond the
21 5 per cent. Now, subsidence beyond a third of a meter is
22 the point down which you will require remedial work to
23 correct it.

24 DR. BEANLANDS: So, in assessing
25 the information which you provided, we have no way of
26 determining what is acceptable or not acceptable. It's merely

1 an indication of the change that might occur?

2 MR. JACOBSON: Exactly.

3 DR. BEANLANDS: Does the panel
4 have any standards for acceptability or non-acceptability?

5 MR. JACOBSON: Of permafrost
6 subsidence?

7 DR. BEANLANDS: That in
8 particular, but standards in general?

9 MR. JACOBSON: In general.
10 They certainly do. What they are, I couldn't tell you. I'm
11 sure that they would be willing to discuss that with you
12 when they come up in July.

13 DR. BEANLANDS: Thank you.

14 MR. CHAIRMAN: Any other staff
15 questions? Mr. Chambers?

16 MR. CHAMBERS: Mr. Jacobson,
17 I'm somewhat confused. On page six of your report in weighing
18 your rankings, or your parameters, "reflecting the relative
19 contribution of each parameter of obtaining a function
20 stability of the existing natural and social system of a
21 region," that's a mouthful, but is there any rating in the
22 economics of these parameters at all to it's importance to
23 the social system of the region?

24 For instance, in your hundred and
25 eighteen component assignment to mammals, Dall sheep have a
26 rating of 32. Moose have a weighted rating of 4. Do you

Mr. L. Chambers
Mr. G. Jacobson
Mr. L. Bouckhout

1 understand the question?

2 MR. JACOBSON: Yes. The
3 rankings were established on the basis of the six criteria
4 that I read off at the beginning. In the case of Dall sheep,
5 they have obviously tremendous economic importance to the
6 Territory. They are a low population, they have a restricted
7 distribution.

8 In the case of moose, obviously
9 important
10 they also have a very/economic implication to the Territory,
11 but their distributions are not particularly restricted.
12 They are not particularly sensitive to disturbance, except
13 at certain times of the year in certain areas, and in balance,
14 using all those criteria, it was the author's intention
15 that there was that much difference when you balanced them
16 out.

17 He recognized certainly that
18 there was economic importance to them.

19 MR. CHAMBERS: Okay, thank you.

20 MR. CHAIRMAN: Mr. Bouckhout,
21 would you like to make a statement?

22 MR. BOUCKHOUT: No, Dr. Hill,
23 we have no comments at this time.

24 MR. CHAIRMAN: I have some
25 questions then for Foothills on the role this evaluation
26 is playing in your planning and design. Are you in fact
using this document in further developing your proposal?

1 MR. BOUCKHOUT: Yes, sir. This
2 document plays a similar role to other information as it
3 becomes available. As Mr. Jacobson has mentioned, it is
4 the -- based on the judgment of professionals as are most
5 issues in this realm based. It is certainly used as a
6 resource document as an information document. It is similar
7 to what other information documents would be used.

8 We review all information
9 available, be it from whatever source, and are continually
10 upgrading and updating our own information bank from which
11 decisions are made. This then becomes one component of that
12 information bank.

13 As you are aware, Dr. Hill,
14 the Alaska Highway Pipeline Panel, is fully autonomous. We
15 have absolutely no, to use the word, not in a negative sense,
16 no control. They determine what they care to study. They
17 evaluate it the way they care to evaluate it.

18 MR. CHAIRMAN: I would like to
19 follow up on Mr. Beanlands question of acceptability criteria
20 that this document suggests that in the substance issue that
21 one third of a meter or one foot, is an acceptable figure at
22 any particular point on the pipeline. But, yet, they don't
23 seem to address the issue of what percentage of the pipeline
24 over that, or whatever factor one is using, is acceptable
25 in terms of design. Have you addressed this issue of
26 acceptability of substance -- subsidence, I'm sorry, Mr. Bouckhout

1 MR. BOUCKHOUT: Subsidence?

2 Well, as I indicated earlier,
3 the implications of the various parameters, of the various
4 change, which will be brought about within the environment
5 as a result of the project are subject to assessment by
6 professional people. People who have years of experience
7 and academic training and so on in these various disciplines.
8 It may be in fact, that on the topic, for instance, of
9 subsidence which you mentioned, that subsidence in one
10 particular area, as an example, a meter depending on local
11 conditions could potentially be acceptable. Two feet or
12 one foot. I'm simply using that as an example. I'm not
13 making a point that it would be acceptable.

14 In other cases, a similar level
15 of subsidence in another area might not be acceptable. Now,
16 the reason that I say that is it depends on the other
17 implications. For instance, if you are dealing with that
18 kind of subsidence, let's take a broad range, which would
19 perhaps better illustrate the point. Let's say two feet in
20 one area, as opposed to five feet in another. If one were
21 in a flat muskeg area, which has very poor drainage, perhaps
22 the subsidence of three or five feet, and subsequent finding
23 might be acceptable, whereas if one were on a sloped area
24 where such subsidence could give rise to hydraulic erosion
25 on the slope, then it certainly might not be. It might then
26 result in a protracted situation, whereby other parameters

1 would then become important and take over. It might be, in
2 other words, the straw that broke the camel's back.

3 So, I think it becomes rather
4 difficult to make a blanket statement on subsidence and
5 certainly on many other issues that you adopt one particular
6 criteria with a hard and fast quantitative limit to it, and
7 apply it to the entire circumstance.

8 This is why, when one considers
9 environmental matters, you discriminate between areas as an
10 instance habitats for moose, or habitats for Dall sheep. You
11 attempt to discriminate between the habitats, the utilization
12 of the habitats, the local populations, other implications.
13 There may be areas which appear to be suitable habitat, which
14 due to limiting factors are not used, and therefore in terms
15 of Dall sheep, the kind of protective measures you would want
16 to apply to that kind of an area, speaking exclusively of
17 Dall sheep, would not be the same as what you would want to
18 apply ^{in an area} which is being utilized and which obviously does not
19 have those limiting factors.

20 MR. CHAIRMAN: I agree. But
21 how, in order to design a pipeline, or anything for that
22 matter, one has to have criteria from which to start. The
23 standards, and how would you plan on developing those
24 standards in this particular situation?

25 MR. BOUCKHOUT: In terms of
26 situations such as you've mentioned, relative to subsidence

1 it would be a matter of a very detailed investigation,
2 particularly by geotechnical engineers, with input from
3 biologists for instance.

4 The reason being that the kinds
5 of things we're talking about in terms of subsidence are the
6 implications for erosion, are implications for habitat
7 destruction, or habitat alteration, are implications for
8 pipeline integrity, and one must, as a team, in evaluating in
9 each separate discipline, evaluate the entire line according
10 to its own set of criteria. According to its own discipline.
11 These are then built up. In other words in one particular
12 area, what might be acceptable in terms of subsidence from
13 strictly a pipeline integrity point of view may in fact not
14 be acceptable in terms of habitat alteration. Therefore, as
15 you evaluate it, the biologists would identify the areas
16 relative to its importance. If it were, for instance, a very
17 limited habitat for a particular ungulate or something like
18 that, and would then establish and a criterion, or a level
19 whereby they would say this is very important habitat, it's a
20 very restricted habitat, and therefore we cannot accept this
21 kind of alteration.

22 It would have to be designed such
23 that this kind of alteration, or this kind of perturbation
24 of a habitat does not result, therefore if that goes back to
25 the geotechnical engineers, who have perhaps a different
26 cut off level, then they would have to go back through the

1 process and, if necessary, redesign for this different level
2 of disturbance.

3 MR. CHAIRMAN: Okay. Assuming
4 this happens, that the criteria are set, and the geotechnical
5 people are asked to go back and redesign in a particular
6 area, and in fact there is no way within the criteria set
7 down on a buried warm pipeline that this can be done, what
8 then happens?

9 MR. BOUCKHOUT: The alternative
10 in that case is then relocation.

11 MR. CHAIRMAN: No. I'm talking
12 about having considered that alternative and decided that
13 it still was not acceptable.

14 MR. BOUCKHOUT: The various
15 methods of reacting to situations such as you have mentioned
16 whereby you have a situation wherein a degree of impact is
17 predicted, the way one reacts to that kind of impact is
18 obviously related to the nature of the area. What kinds of
19 animals in the area, and other implications. Then in
20 reacting to it and mitigating impact, the absolute, which we
21 have already discussed, is relocation. If there is a condition
22 in that area that would be unacceptably altered by construction
23 of the pipeline, then you would -- any kind of construction of
24 the pipeline, you would relocate.

25 If relocation is not possible,
26 due to other constraints, such as topographic constraints and

1 so on, it is not, in all cases, necessary to relocate. There
2 are other levels of reacting to environmental impact. The
3 kinds of levels, and I know we're dealing with a fiscal
4 parameter, but I think I mentioned these before and it might
5 be worthwhile mentioning them again. Timing constraints,
6 which obviously does not relate to subsidence. Timing
7 constraints are one thing that could relate to subsidence,
8 however, it could relate to timing of construction, timing of
9 construction thereby implicating what might happen to the
10 terrain as a result of construction. In other words, winter
11 construction as opposed to summer construction, something
12 like this. Which is what we've discussed on the north end of
13 the line, winter construction as opposed to summer.

14 Other levels include special
15 design measures. Erosion control measures for instance. The
16 installation of granular rip-rap on unstable slopes and so on.
17 Other measures are contingency planning measures, would be
18 another level. The various rehabilitation measures are another
19 level, in other words revegetation, which ties in to the
20 physical parameters of slope stability and the contingency
21 measures.

22 These, -- I'm not sure I've got
23 them all, there's a rank of approximately six kinds of
24 measures you will find. If you find a certain circumstance
25 whereby one measure is not adequate, in many cases there are
26 many measures piled on top of each other.

1 MR. CHAIRMAN: Right. However,
2 my concern, I don't know about my fellow members, would be
3 where an approval would be given for a project, and the actual
4 design of the project would change that project so much
5 that the resulting project is quite a different type of
6 endeavor.

7 For instances, as I understand
8 the after approval was given for the Alyeska line, the
9 percentage of buried pipeline, elevated pipeline, went from
10 a very small figure to near fifty per cent. The actual
11 pipeline as proposed and is built in that case were quite
12 different things. We, of course, have to be aware that the
13 measures taken to get around some of these problems in order
14 to meet the criteria which you have described, can in fact
15 result in a quite different project than that proposed.

16 MR. BOUCKHOUT: In that respect,
17 Dr. Hill, I anticipate and I'm sure you do as well, that any
18 review of this project up to and including certification will
19 not be the final review. That there will be control measures
20 beyond that. I'm sure we all appreciate that's the way the
21 project will be built. Certain measures will be instituted
22 and at the stage of certification, it will be conditional, as
23 I mentioned in our opening remarks. Certainly beyond that
24 stage then, there will be other reviews if design changes do
25 come up, and obviously we're going from now from a preliminary
26 design stage in to a very detailed design stage. And this

1 detailed information isn't available for your perusal at this
2 time, but it will be available as we go in to the final
3 design of the project, and this final design will then
4 be reviewed, and be reviewed by many people from many
5 disciplines, and they will have the facility at that time
6 to evaluate the design and then make a decision as to whether
7 the design does meet the criteria, does do an adequate job,
8 or perhaps doesn't. Whether something else is necessary.

9 MR. CHAIRMAN: Yes, I was just
10 outlining a parallel situation which happened on the Alyeska
11 line that approval in principle was given, and then the
12 detailed design was gone through and the number of changes
13 were such to make the pipeline quite a different endeavor,
14 because of the changes brought about by the detailed
15 consideration on a mile by mile basis.

16 MR. BOUCKHOUT: Right.

17 But such changes, of course, are
18 not necessarily always negative.

19 MR. CHAIRMAN: Oh, I'm not
20 suggesting --

21 MR. BOUCKHOUT: They are in most
22 cases, and virtually all cases would be to the positive side.

23 MR. CHAIRMAN: Of course, in our
24 case, what we are trying to do is evaluate the pipeline as it
25 would be built, and this is a difficult thing^{for us} if we don't
26 understand your criteria and what effects, and our criteria, of

Mr. L. Bouckhout
Mr. F. Claridge

321.

1 course, and what effects that might have on the final
2 design characteristics of the pipeline.

3 MR. BOUCKHOUT: Surely, surely.
4 I believe Mr. Claridge has something to add on the previous
5 point.

6 MR. CLARIDGE: If I might, Dr.
7 Hill, I might -- I would just like to add one comment since
8 the question of settlement has been raised over the last few
9 days, and that is to attempt to put it in to perspective.
10 When you refer to the Alaska pipeline, approximately half of
11 that line was built above ground for the reason that half of
12 the pipeline followed ice-rich permafrost. The climate and
13 permafrost conditions on that line were considerably more
14 severe when looked at as a whole, than is the case with the
15 Alaska Highway pipeline.

16 You can refer yourself to the
17 report on estimated settlements produced for Foothills. But
18 in summary I would say that the area where we would have a
19 legitimate concern for thaw settlement, is in the northern
20 eighty miles of the pipeline. And of that, the initial forty
21 miles will have a chilled mode, and the settlement problem
22 will be essentially eliminated in that portion.

23 If it were determined, on further
24 investigations that a serious settlement problem persisted
25 south of mile 40, then I am sure that that chilled mode would
26 be brought further south. But it is our conclusion that it is

1 not a severe problem. When I looked at Mr. Jacobson's
2 evaluation of where he gave a point rating, I was of almost
3 the opposite mind to the staff. I thought perhaps too many
4 points had been placed on permafrost, because the amount of
5 line is relatively short, and I was going to ask him, in fact,
6 if he had taken mileages -- total mileages, where there may
7 be a problem into account in deriving his total number of
8 points.

9 My feeling, comparatively
10 between stability and permafrost is that stability should have
11 a higher point rating than permafrost because there are
12 considerably steeper slopes along the entire pipeline that I
13 think would raise concerns, certainly environmentally, if you
14 get in to a tallow slope that requires cutting, you can
15 disturb quite a width of ground, and I feel that impact is
16 perhaps more severe than a settlement trough of perhaps a
17 few feet width directly over a pipe.

18 As Mr. Bouckhout indicated, I
19 can confirm that, that where there is a settlement situation
20 that is severe, there will almost always be in an area of
21 poor drainage, where peat has accumulated which provides an
22 insulation that is the principle reason that permafrost is
23 there in the first place. These areas are generally poorly
24 drained and the addition of a little more water to my mind
25 will have no material impact when you consider all of the
26 water that would be present in -- we're talking about a muskeg

1 area. So I'm just trying to put it in to perspective that
2 we are looking at a relatively short distance and there are
3 ways and means that have been proposed by Foothills to
4 control settlements to what we feel are quite acceptable
5 levels.

6 Criteria as you suggest, should
7 be established from a pipe design viewpoint. That criterium
8 is related to depth of settlement of the pipe versus a length,
9 and there are criteria established in the Foothills designs.
10 These have been considered, up to this point, as acceptable
11 for environmental purposes as well. But I am sure that you
12 will have your own views on that.

13 MR. CHAIRMAN: Did I get you
14 right that if the criteria for structural integrity are met,
15 then this also equals the environmental criteria along the
16 route?

17 MR. CLARIDGE: Well that's
18 certainly, Dr. Hill, not necessarily the case. In all respects
19 one -- I think one could harken back to the fact that relative
20 to the physical environments, if one is to design and so
21 construct the pipeline so that the integrity of the pipeline
22 is maintained, and this is a fair -- obviously a very critical
23 thing, as well as the environmental aspects. That the kinds
24 of concerns relative to the integrity of pipeline in many,
25 many cases, and probably the majority of the cases are the same
26 kinds of concerns from a physical environmental point of view

1 that are relevant to the environment. So really, although
2 one may be designing a particular measure or particular mode
3 of installation, or particular design for different reasons,
4 they are really directed toward the same thing. For instance,
5 drainage control. Let me use that as an example. One would
6 want to maintain natural drainage patterns and natural drainage
7 across the pipeline right-of-way from the point of view of
8 the integrity of the pipeline. You do not want the water
9 to channel down the pipeline right-of-way, down the ditch
10 line, because you don't want the pipe itself to be exposed.
11 Similarly, you would want to maintain natural drainage
12 patterns simply so there is no change, or is as little change
13 as possible in a down slope, or down stream portion or area,
14 relative to the pipeline.

15 So, you're really, although you
16 are doing it for different reasons, you are working toward
17 the same end.

18 MR. CHAIRMAN: Not always.

19 MR. CLARIDGE: No? Not always,
20 granted.

21 MR. CHAIRMAN: Would you like
22 to comment on the ranking, Mr. Jacobson, on -- brought up
23 just now?

24 MR. JACOBSON: The ranking in
25 the land section was done by the professionals working in
26 that particular discipline. They used the six criteria out-

Mr. G. Jacobson
Mr. F. Claridge
Mr. V. Schilder

325.

1 lined in the beginning, and it was their judgment, based on
2 those six criteria that permafrost should be ranked at that
3 level.

4 MR. CLARIDGE: I just wanted to
5 be certain it took into account the total number of miles
6 that a particular problem, such as permafrost, might --

7 MR. JACOBSON: It is my
8 understanding they did.

9 MR. CLARIDGE: Yeah, thanks.

10 MR. CHAIRMAN: Are there any
11 comments or questions from the floor?

12 Yes?

13 MR. SCHILDER: I have a
14 supplemental question to the applicant. The question is
15 whether the applicant has ever -- that the interest in the
16 maintenance of a quality of the physical environment may be
17 also expressed, for example, in connection with land tenure
18 agreement, which may be given through certain parameters. One
19 of them could be that no settlement larger than one foot,
20 perhaps, it's only an academic example, would be allowed within
21 the right-of-way of the pipeline.

22 In view of that, for example,
23 your rating in connection with evaluation of significance of
24 permafrost for the design in connection with physical integrity
25 of the pipe is with the maintenance of the quality of the
26 physical environment may be upset.

1 MR. BOUCKHOUT: Dr. Schilder,
2 certainly there are criteria for almost everything. We have
3 the Canadian Standards Association, we have already mentioned
4 that, their water quality criteria, their air quality criteria.
5 If in fact, that was an environmentally sound criteria, and
6 I'm not questioning it, I'm just using that as an illustration,
7 if in fact that were an environmentally sound criterion, then
8 certainly it would be a possibility. It's a matter of
9 developing a criteria to fit the situation, to take into account
10 the various aspects and the various implications of the
11 situation. As I mentioned, and we discussed it before, in
12 some cases that may be very valid and may be appropriate.
13 In other cases it may be "overdesigned".

14 MR. CLARIDGE: Maybe I could
15 add a point Dr. Schilder. If a criteria of say a one foot
16 settlement were established and concern what that would mean
17 would be an extension of the last point of cold flow
18 considerably south. I think that's the only conclusion
19 that could be reached, that there would inevitably be pockets
20 of material that the warm gas would cause thawing into
21 greater than one foot, and although your criterion could be
22 met, I'm concerned that you would create more problems by
23 having the chilled line through extensive areas of unfrozen
24 ground that you would have a drainage interruption effect
25 and potentially a frost heave effect, and that would concern
26 me more than exceeding the one foot criterion and what I perceive

Mr. F. Claridge
Dr. Beanlands
Mr. G. Jacobson

327.

1 to be localized areas. That's why I say you have to look at
2 a balance between chilling and thawing. It's not an easy
3 matter to come to a solid criterion that is fair to the whole
4 pipeline.

5 DR. BEANLANDS: Mr. Jacobson,
6 I wonder, just for the record, is the conclusion of your
7 panel that there are no environmental reasons why the
8 pipeline should not be built?

9 MR. JACOBSON: Is that the
10 conclusion of the panel? I've never seen that written down.

11 DR. BEANLANDS: That's why I'm
12 asking you.

13 MR. JACOBSON: No, I can't
14 speak for them on that. I'm sure that they will give you a
15 response to that question, but there's no way that I can
16 speak for them on that right now.

17 DR. BEANLANDS: Well, I'll
18 rephrase it. In your understanding of the results of the
19 study, as Study Director, was there any single factor which
20 would indicate, from an environmental point of view, that the
21 line should not be built?

22 MR. JACOBSON: There are still
23 problems with the line, as we pointed out in our study. They
24 haven't been resolved yet. I think the conclusion of our
25 staff, and I'm speaking my interpretation of what the staff's
26 conclusion is, is that most of those problems can be overcome.

Dr. Beanlands
Mr. G. Jacobson
Dr. O. Hughes

328.

DR. BEANLANDS: The last question then is what are the plans for the future for the panel?

MR. JACOBSON: In terms of future work on this panel?

DR. BEANLANDS: Yes.

MR. JACOBSON: They are continuing to work on the project. They are meeting in Winnipeg this week to finalize their summer program, as I understand it, and I know controls and recommendations and mitigative measures are one of the subjects that they are very interested in, both in the environmental area, and the socio-economic area, and they will be continuing work in those areas.

DR. BEANLANDS: Thank you.

MR. CHAIRMAN: Dr. Hughes?

DR. HUGHES: Just as a follow-up to your response to Mr. Beanlands' question. Would it be possible for the panel to have a copy of the schedule of work, any additional investigations that your panel will be engaging in this summer?

I had another question. I believe that you said that this report was prepared in, or at least the work that went into the preparation of it, was completed last fall?

MR. JACOBSON: It was initiated last fall.

Dr. O. Hughes
Mr. G. Jacobson
Mr. B. Lister

329

1 DR. HUGHES: During the time
2 that you were working on this, do you know if your people
3 had available to them the volume prepared for Foothills on
4 the frost-heave problem?

5 MR. JACOBSON: I couldn't
6 answer that. I would have to ask our specialists back in
7 Winnipeg.

8 DR. HUGHES: Well, maybe I
9 could ask a subsequent question, and you might ask them that
10 as well. Are they in agreement with the particular approach
11 used by Foothills for calculating the probable frost heave
12 in that particular volume, the calculations of the frost-
13 heave under different conditions of special bedding material
14 and insulation? Are they in agreement from a geotechnical
15 point of view with the reliability of that approach to the
16 calculation?

17 MR. JACOBSON: I will get them
18 to respond to that point.

19 DR. HUGHES: Thank you.

20 MR. CHAIRMAN: Mr. Lister?

21 MR. LISTER: Mr. Chairman, I
22 would like to address a question to Mr. Bouckhout. Earlier
23 I asked Mr. Jacobson about the problem of water quality
24 impairment at four of the six proposed construction camp
25 locations. He indicated that to his knowledge the panel
26 had not changed their essential conclusion that there was

1 likely to be serious water quality impairment. But do you
2 agree with that conclusion in their report?

3 MR. BOUCKHOUT: That there is
4 likely to be serious water quality impairment? Yes. -- No,
5 not necessarily I don't, sir, for several reasons. Initially
6 we have not done the final design on the camps. The camps
7 are sited now, and I think I mentioned this earlier on an
8 optimal basis with respect to the location on the spreads and
9 so on, these camp sites, as well as other sites, stop-well
10 sites and so on, will be continually under review. There is
11 mobility for a construction camp site, for instance, if it
12 is found that a particular site which is designated now
13 would in fact lead to that, given our commitment to secondary
14 sewage treatment, given the various design parameters that
15 will be and can be applied to camp locations, then certainly
16 it is possible to relocate the camp to an area where those
17 problems would not prevail.

18 I think it's really necessary to
19 put that into perspective, that a camp location is sited on
20 the map now, and may very well be precisely where that camp
21 will be, but it may very well be not necessarily exactly
22 where it will be. As we gain more information and more
23 assessment is done of those locations, if it becomes
24 prudent to move the camp to a different location where
25 particular problems would not prevail, then that would be
26 done.

Mr. B. Lister
Mr. L. Bouckhout
Mr. L. Chambers

331

1 MR. LISTER: Okay. My concern
2 arose from the fact that four of the six camps were located
3 on rather small drainages which, it was the conclusion of the
4 Alaska Highway panel, that even with secondary treatment,
5 there would be significant impairment and very low oxygen.

6 Beaks follow-up study of where
7 winter fish investigations last winter, indicated that on two
8 of the sites, a high degree of freezing of the water supply
9 and very, very limited winter water supplies.

10 Now this would suggest to me
11 that there was some poor judgment in the initial location
12 of those sites. I was just wondering is Foothills flexible
13 enough to take this into account, and I think your answer
14 indicated that was the case.

15 MR. BOUCKHOUT: Yes, we
16 certainly are. Obviously, both the potential for
17 environmental impact as a result of sewage discharge as well
18 as the import of availability of water for camp use are both
19 criterion in assessing camp locations. Certainly the
20 flexibility is there, most definitely, to relocate on the
21 basis of either or both criteria.

22 MR. LISTER: Thank you.

23 MR. CHAIRMAN: Mr. Chambers?

24 MR. CHAMBERS: Mr. Jacobson,
25 coming up with your potential -- your environmental assessment
26 index, I take it that you based that on the best available

1 information you could find. Especially in regards to the
2 mammal section?

3 MR. JACOBSON: Absolutely, at
4 the point in time that it was written.

5 MR. CHAMBERS: At the same time,
6 Foothills are still carrying out surveying -- presented with
7 this report yesterday on winter surveys for ungulates. If
8 your panel had new and existing information available to it,
9 would this in fact change your E.A.I. rating?

10 MR. JACOBSON: Absolutely. We
11 received a copy of that report, I think, last week. I
12 personally haven't seen it yet. The staff is continuing
13 to work on problems associated with this report. I
14 anticipate we will be continuing work on recommended controls
15 and mitigative measures, and the items that you mention of
16 new information will certainly be taken into account in
17 recommendations for controls and mitigative measures.

18 The E.A.I. values that you talk
19 about are based on our knowledge of the environmental
20 information at that point in time, our knowledge of the
21 project at that point in time, and I think we illustrated it
22 with a potential impact index, and a controlled impact index.
23 The controlled values being our interpretation of what it
24 would be, given that the controls we included in this section
25 were implemented.

26 MR. CHAMBERS: Yes, but your

1 controls -- your mitigating controls were based on your
2 assumptions or known data from the first one, and I beleive
3 in going through some of this stuff, there is some confusion,
4 in particular I pick out an example of their winter surveys
5 of caribou in the Squanga Lake diversion and down in the Swan
6 Lake area, where there are large concentrations and your
7 professions have assumed that there is no -- or pipeline
8 surveillance wouldn't cause any detrimental effects to
9 caribou because of in winter time the vegetative conditions
10 of caribou would be in which seems somewhat to conflict with
11 the winter survey that was just completed and published and
12 that they did find fairly good concentrations of caribou in
13 those two areas and that there was a factor of air overflights
14 which would be disturbing to them; which would then change
15 your E.A.I. rating for caribou I would take it?

16 MR. JACOBSON: It certainly
17 could.

18 MR. CHAIRMAN: I have a question
19 in the first page of the initial evaluation there, the goals
20 of the panel expressed, and the fourth goal is to advise
21 against construction or for construction of a gas pipeline,
22 and against it should the panel decide that mitigative and
23 controlled measures would not achieve the primary goal. There
24 is some confusion there because, oh, I see. The primary
25 goal is stated that the panel is to maintain or achieve
26 environmental protection on any projected Alaska Highway gas

1 pipeline route. Now, could you advise me when the panel
2 would be offering that advice?

3 MR. JACOBSON: To this Inquiry?

4 MR. CHAIRMAN: Well, I believe
5 that -- yes. The major decision on pipeline routes -- it is my
6 understanding the major decision on pipeline routes will be
7 made in September. September 1st -- by September 1st and
8 we must report by August 1st, so we're very interested to know
9 what the advice of the Alaska Highway Pipeline Panel is.

10 MR. JACOBSON: I would assume
11 that they would address that issue when they make statements
12 before your hearings starting on the 5th of July.

13 MR. CHAIRMAN: Thank you.

14 Mr. Schilder?

15 DR. SCHILDER: I have a note and
16 an additional question. I certainly agree fully with the
17 panel, cite specific comment about locations of, it's from
18 right in here, compressor stations and other facilities,
19 but what I have right now in mind mostly construction camps
20 when your report is recommending that their locations should
21 be reconsidered. I would like to address now, myself to the
22 applicant and do put it on public record that the panel has
23 already expressed its interest in obtaining additional
24 information concerning construction camps and especially
25 concerning all relevant details concerning water uses.

26 The panel certainly would be

1 pleased to get general criteria for the selection and the
2 locations of the camps along the Yukon route. The panel
3 would be interested in obtaining information on water
4 resources at each camp, on various information relevant to
5 description of water quality and water quantity of resource.
6 Further, an interest has been expressed from the panel
7 to obtain all description for water uses indicating water
8 requirements and the implications for changes in water quality
9 and quantity from these uses. Further, an interest was
10 expressed for basic characteristics of water supply and water
11 treatment facilities. Details about water withdrawals and
12 about the points of discharges has been also expressed. The
13 panel considers it significant to obtain information about
14 any toxic material and their volumes which may be used or
15 stored at these sites, which may enter it's sewage or escape
16 into open environment. That case would be relevant and
17 additional information of the contingency plans for the
18 containment and clean-up would be desirable to obtain for
19 further consideration.

20 Further, the panel expressed its
21 desire to obtain time schedules for construction and operation
22 of camps indicating the fluctuation of labour force and
23 plans for their abandonment and environmental statement on
24 the potential and probable impact of the camp construction,
25 operation, and abandonment, and the emphasis on the natural
26 hydrologic conditions within the areas of the camps.

1 A desire has been expressed that
2 this information would be appreciated if received before
3 July 15th. If the applicant could indicate anything on this
4 subject, it would be appreciated.

5 MR. BOUCKHOUT: Dr. Schilder, I
6 recognize those questions. We, of course, have that informa-
7 tion request, or at least I recognize most of them. I believe
8 they are all in information requests presented to us. We
9 have, in fact, completed one request and filed it with you
10 yesterday; we have our people now working the precise one
11 which you've just mentioned. We are making every effort to
12 get that information to you certainly by the 15th of July
13 and if at all possible, prior to that, by the 1st of July if
14 at all possible.

15 You must understand additionally,
16 that this project is in a preliminary design phase, it's not
17 in a final design phase, and some of the detail which you
18 requested is very much final design detail, and some of it
19 therefore will not be available, and I'll simply have to say
20 so. But whatever is available at this time certainly will be
21 provided to you, sir.

22 MR. CHAIRMAN: Okay, does that
23 answer your question? I would then ask Mr. Jacobson if he
24 would like to say anything as a final statement.

25 MR. JACOBSON: I would like to
26 make about three minor points.

1 I would first like to apologize
2 to the Inquiry and to the staff for any confusion our report
3 may have caused you, and if there is any way that I can
4 make staff available, to clarify any points, I would certainly
5 be happy to do that.

6 In terms of the discussion we
7 had about the rankings and the assessment index, I think the
8 major point I would like to leave you with is that we're
9 suggesting that these are a set of biological and physical
10 parameters which should be addressed by this Inquiry.

11 Secondly, I think the major
12 point that should be made relative to those parameters is
13 to define what the impact is going to be, relative to each
14 parameter.

15 Thirdly, the relative importance
16 ranking can be used by the Inquiry to put those impacts in
17 perspective. One parameter to another; one group to another.
18 The procedure that we have outlined to assign rankings of
19 some sort for your information, I think, would be useful to
20 the Inquiry, not to the actual numbers that we have in there,
21 because they are our personal opinion.

22 MR. CHAIRMAN: Thank you. I
23 would personally like to add a note of thanks.

24 I personally believe, and I can't
25 speak for the panel, that the type of endeavor of the Alaska
26 Highway Pipeline Panel, an independent group at arms length

1 from the applicant preparing an environmental assessment was
2 of great use to me; is a great use to me, and I believe it's
3 a very worthwhile endeavor.

4 Thank you very much.

5 MR. JACOBSON: Thank you.

6 MR. CHAIRMAN: I would like to
7 break for coffee. Is coffee ready, Mr. Timbermans?

8 (PROCEEDINGS ADJOURNED)

1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT).

2 MR. CHAIRMAN: Mr. Bouckhout,
3 you'd like to present some documents?

4 MR. BOUCKHOUT: Yes sir, in
5 response to a request for information relevant to our pipe-
6 line proposal, in request to, perhaps for general information,
7 whatever information we can, it can be made available.

8 I'd like to forward to you at
9 this time, a document entitled 'Preliminary Environmental
10 Impact Assessment of the Proposed Alcan Pipeline'. I have
11 with me Volumes 1 and 3. Volume 1 being entitled 'Beaver
12 Creek to Zama Lake' which is essentially the Yukon segment
13 and Volume 3 entitled 'Appendices'.

14 This document was prepared in
15 June of 1976 by C.D. Schultz and Company Ltd. of Vancouver
16 for one of our partners.

17 MR. CHAIRMAN: Thank you. We
18 will now hear Ms. Ernie Watson, representing I.G. Watson.

19 MS. WATSON: This was a brief
20 that was originally presented at the Alaska Highway Pipeline
21 Inquiry. Mr. Winmill was present at those Inquiry hearings
22 and he asked if we could present it again here, hoping that
23 it's of some interest and benefit to you.

24 The brief was prepared by Mr.
25 Ronald C. Watson and he attaches a letter which actually went
26 to the Pipeline Inquiry but I'm sure it can go for this Panel

Ms. E. Watson

1 as well.

2 Dear Sir. I am attaching an
3 appendix with my brief. I felt that since I'm one of a very
4 few who have had an association with all the pipelines that
5 have operated in Yukon, there might be some information
6 that would be of interest to you and your members. You may
7 use it as you wish.

8 I regret that I will not be in
9 the Yukon while your Inquiry is at Haines Junction. I wish
10 you and your committee a successful experience throughout
11 your hearings.

12 The appendix is as follows:
13 My name is Ronald Watson, a Yukon resident since 1947. For
14 eight years I lived in Whitehorse with my family and for the
15 past twenty-two years at Haines Junction.

16 Because of other commitments,
17 I will be unable to present an oral opinion while at your
18 committee hearings in Haines Junction, therefore, I prepared
19 this brief for your consideration.

20 I am retired after twenty-four
21 years with the U.S. Army as a civilian employee. All my
22 employment in the Yukon involved pipelines and I have worked
23 on all five pipeline systems that have operated in the Yukon.
24 My retirement was due to the closure of the Haines-Fairbanks
25 pipeline in 1971.

26 Through 1947, I worked on the

Ms. E. Watson

1 removal of the Standard Oil Refinery in Whitehorse. I spent
2 the winter of 1947 to 48, working on the removal of the
3 crude oil line from Norman Wells to Whitehorse. In 1948,
4 the U.S. Army reactivated the three inch-Canol pipeline from
5 Whitehorse to Fairbanks and I accepted employment with them.

6 I worked on the removal of the
7 motor fuel pipeline to Watson Lake, as well as the removal
8 of all pump stations and their related equipment installed
9 along this section of the route. The three-inch line north
10 of Whitehorse originally had eight pumping stations located
11 in the Yukon.

12 When the pipeline was reactivated,
13 only two of these stations were utilized. These were Station
14 A, located near Whitehorse and Station E, located at Mile
15 1080 on the Alaska Highway. During 1948 through 1951, all
16 the remaining stations and their equipment was removed by
17 the U.S. Government. The three inch line was used until
18 1956, 57. It was sold in the early 1960's and removed from
19 the right-of-way by the contractor.

20 The four inch diesel fuel line
21 from Skagway, Alaska to Whitehorse, Yukon was operated by
22 the U.S. Government from 1948 to 1957. This line also
23 supplied diesel fuel to the Yukon by agreement with the U.S.
24 Government and the White Pass and Yukon Petroleum Division.
25 The American Government turned the line over to the Government
26 of Canada and they in turn passed the line to White Pass,

1 who continue to operate this pipeline today.

2 The Haines-Fairbanks pipeline
3 was built in 1954 to 55. I was stationed at Mile 1026, Station
4 28, a station foreman with a staff of from seven to ten
5 employees. We had the maintenance responsibility for most
6 of the Yukon section of the pipeline. All our employees
7 were Yukon residents, mainly chosen from employees of the
8 Highways Department. These people were familiar with living
9 in isolated areas and we had exceptionally good employees.
10 They were given on-the-job training and were attracted to
11 the positions by very good working conditions and higher
12 wage levels than were currently paid in Canada.

13 There were forty-four to forty-
14 eight employees working within the Canadian section of the
15 pipeline. The pipeline pumped jet fuel, aviation gasoline,
16 motor fuel and diesel fuel. From 1955 to 1963, it had a
17 pumping capacity of approximately five hundred and fifty
18 barrels per hour. This was increased to about a thousand
19 barrels per hour in 1963 when three new stations were added
20 in Canada.

21 All of the pipelines built in
22 Canada by the U.S. Army were above ground. It is noteworthy
23 that all sections of the Haines-Fairbanks pipeline through
24 American territory were buried. There was certainly benefits,
25 both operational-wise, because thermo reactions was minimized
26 and maintenance-wise because of people shooting holes in the

1 line, which occurred three times and damage by equipment
2 walking across the line. There were no breaks, but many
3 repairs were required because of this type of damage.

4 However, the buried line in
5 the U.S. sections was not coated or wrapped and despite
6 cathodic protection, by 1969, much of the first thirty-five
7 miles from Haines required replacement. There were many
8 ruptures on the southern section caused by electrolysis.
9 Only one instance occurred in the Yukon. This in 1968 at
10 Mile 129 on the Haines Road. In May of 1968, a small rupture
11 occurred during the pumping cycle and was not noted until
12 shutdown, when the pressure drop was noted immediately and
13 the break found and isolated by closing block valves ten
14 miles apart.

15 The main damage had already
16 been done as the break was located on a side hill. Much of
17 the area below the break was permafrost and the diesel fuel
18 ran into Dezadeash Lake. The American Government quickly
19 took corrective action. The lake was swept with straw and
20 oil slick brooms and burnt on the north end of the lake. We
21 kept a crew busy for almost a year at this site. Very little
22 environmental damage occurred, only two or three birds were
23 found and a few fish that had died as a direct result of the
24 spill.

25 One good thing came as a result
26 of the spill. Until this time, the National Energy Board of

Ms. E. Watson

1 Canada were not concerned or unaware that a military pipeline
2 ran through the Yukon. When the matter of a break was raised
3 in the House of Commons, a representative of the Energy
4 Board was dispatched to the scene. He soon found out that
5 the Board had no authority over the military pipeline and
6 was powerless to bring the line under their jurisdiction
7 until 1974.

8 As a result, we attended a
9 meeting in Ottawa with the National Energy Board, the U.S.
10 Army and the U.S. State Department in 1970 and were told
11 that before a new agreement was signed with Canada, the
12 pipeline would have to be under the jurisdiction of the National
13 Energy Board.

14 Only one other serious matter
15 occurred with the pipeline that could have caused considerable
16 environmental damage. This occurred during 1955 at the
17 original takeover from the contractor, Williams Bros. Marwell
18 in September, by U.S. Corps of Engineers. The pipeline had
19 been hydrostatically tested by the contractor. His personnel
20 and some U.S. employees had operated the line for a consider-
21 able test period and there were no problems. The line was
22 then turned over for normal operation.

23 Approximately a week after,
24 the line had to be shut down because of a late tanker
25 arrival in Haines. When start-up occurred a week later, the
26 temperature had dropped well below freezing. The suspended

1 ice crystals had dropped to the bottom of the line and
2 frozen. A high concentration of crystals and some water
3 left from the hydrostatic test, soon concentrated and caused
4 a line blockage. The line was not cleared until May the
5 following year, despite the fact that twenty-seven cuts were
6 made to blow the ice out of the line.

7 All through this period, there
8 were no Canadian officials involved in environmental
9 protection. To the credit of U.S. personnel, every effort
10 was made to avoid damage. To my personal knowledge, only
11 one creek, Swede Johnson, suffered from pollution by product
12 and it took several years before the creek returned to normal
13 for fishing.

14 As a result of the 1968 break,
15 the U.S. undertook to toposcope the pipeline to determine
16 its condition. Only one area in the Yukon required attention.
17 This at Klukshu River at Mile 118 on the Haines Road in the
18 Yukon. The U.S. Government then replaced a twenty mile
19 section with plastic coated pipe. This area covered the
20 Dezadeash Lake and the Klukshu River watershed. The overall
21 condition of the southern section in Alaska required that
22 approximately forty-two miles of line required replacement.

23 The cost estimate was thirteen
24 million dollars. This fact, together with changing the main
25 staging area from Eilson Air Force Base, Fairbanks to
26 Elmandorf Air Force Base in Anchorage. The installation of

1 an eight inch pipeline from the Port of Whittier to Anchorage
2 were the main causes of the shutdown of the Haines-Fairbanks
3 pipeline in 1971. Product was removed from the line by
4 injection of a batch of alcohol and water, followed by pipe-
5 line pigs. The line was then purged with air pressure and
6 completely cleared and it remains so today.

7 The mainline pumping station
8 equipment has been preserved and the stations mothballed.
9 At present, they have been turned over to the General Service
10 Administration of the U.S. Government. At the time of the
11 shutdown, reflection from Haines Junction to the border was
12 in good condition. The northern section, border to Fair-
13 banks, remains intact and the line could be used to back-
14 pump from Fairbanks to Haines Junction by changing the mani-
15 folding in the existing stations.

16 One feature of the operation
17 of the Haines-Fairbanks pipeline, as it would have affected
18 Yukon residents, has been of concern to me. The agreement
19 between Canada and the U.S. allowed for products to be taken
20 off at Haines Junction and used in the Yukon. A tie-in was
21 originally installed at Mile 1026 and we actually pumped
22 back to Whitehorse through the three-inch line.

23 Yukon residents could have had
24 the benefits of cheaper products for over fifteen years. You
25 may draw your own conclusions as to why this was never done.

26 For your own information, the

1 military cost per gallon of fuel from Seattle to Haines
2 by tanker, thence by pipeline to Fairbanks, was three cent
3 per gallon, this being transportation costs. Included
4 in this estimate was the tanker charges, pipeline personnel,
5 plus headquarters staffing and the operational and maintenance
6 costs of all facilities.

7 I fully realize that this may
8 not be a concern to your Inquiry, however, I thought that it
9 might indicate that many Yukon residents are familiar with
10 pipeline systems, particularly along the North Alaska High-
11 way and their opinions would certainly be more meaningful
12 as a result.

13 That concludes the appendix
14 that he sent along and this is the brief that he presented
15 to the Lysyk Inquiry.

16 There can be little doubt that
17 some adverse social effects will result should the applicant's
18 pipeline proposal be accepted. Any major construction pro-
19 ject has many undesirable side effects on small local
20 communities, in many cases, because of the fact that we are
21 not often subject to major construction activities. Many
22 Yukon communities have barely enough services to properly
23 take care of the needs of their own residents.

24 For these reasons, every effort
25 should be made by the applicant, the Federal and Territorial
26 Governments to ensure that insofar as possible, every effort

Ms. E. Watson

1 is made to minimize the problem that will result by such
2 an increase in our population. We in the Haines Junction
3 area, have experienced several fairly large construction
4 activities over the past twenty-three years and these have
5 given us the opportunity to view this proposal with some
6 knowledge and understanding of its implications.

7 Haines Junction began to
8 develop as a community shortly after the end of the con-
9 struction of the Alaska Highway, mainly to provide services
10 for travellers, highway maintenance, CNT and Canol pipeline
11 work crews. It has grown from one business in the mid '40's
12 to a fairly large community as highway communities go in
13 1977. Several activities contributed to our growth. These
14 being the Federal Government Experimental Station at Mile
15 1018, the Haines-Fairbanks pipeline at Mile 1026, the CNT
16 Microwave, the Alaska-Yukon Refinery at Haines Junction,
17 Kluane National Park and the Aishihik Power Development.

18 Most of these projects had
19 some effect on Haines Junction as a community. They gave our
20 small community a taste of the boom and bust or ups and downs
21 that result from these developments. The refinery shut down,
22 the experimental farm was closed and the pipeline was shut
23 down. All of these had a marked effect on the social and
24 economic life of Haines Junction.

25 I cite these instances to
26 assure members of the Inquiry that we have the necessary

1 background to be able to assess the applicant's proposal
2 on its merits at least as far as it applies to our community.
3 On the positive side, each one of these activities assisted
4 the community to develop. They brought additional permanent
5 residents who required housing and other services. They
6 enabled the residents to build their own community club
7 and to provide recreational and social activities for all
8 residents of the area.

9 Additional people enabled us
10 to establish our own Local Improvement District and to provide
11 water and sewer services to our town. Business was able to
12 expand as a result of permanant residents and our community
13 became less dependent on Whitehorse for supplies and materials.
14 Government provided additional services to meet the needs of
15 our residents.

16 While we still lack many of
17 the services, we now at least have a good solid base to
18 develop from. With reasonable lead time, I feel that our
19 community could respond to the needs that such a proposal
20 as a pipeline would require. During the past nine months,
21 our community has had two public meetings with Foothills
22 representatives and one public exhibit of the type of in-
23 stallations that would accompany the development.

24 We have had the opportunity to
25 question the pipeline representatives on all aspects of this
26 proposal that would affect our area. I have been encouraged

1 by the fact that for the first time, local residents are
2 being given the opportunity to fully discuss the results of
3 a major construction development in their area.

4 From the applicant's schedule,
5 it would appear that the Haines Junction and Teslin sections
6 would be scheduled for construction during the summer of
7 1979. The forecast for employees indicate that two
8 thousand one hundred and fifty men will be on the project
9 at that time. This would indicate that a thousand and
10 seventy-five workmen would be allotted to the two construc-
11 tion sites located near Haines Junction and Destruction Bay.
12 Splitting these workmen evenly to the two sites, would in-
13 dicate that approximately five hundred and fifty men would
14 be located near Haines Junction.

15 From figures I have been able
16 to obtain, this would be approximately twenty-five to thirty
17 per cent more than were employed at the hydro development
18 during its peak period. To my knowledge, there were no
19 serious social problems that affected Haines Junction during
20 this period. The economic benefits to Haines Junction were
21 very much appreciated by local businessmen.

22 Foothills have indicated that
23 they will establish canteens in which of their work camp-
24 sites. I feel that this is a good move. It will give the
25 contractor an opportunity to police his own operation and
26 to provide a place for his employees to relax after the

1 work day, without having to travel to local beverage outlets
2 if they wish to have a drink. There will be some who do use
3 the local establishments, but previous experience has
4 indicated that the local business places exercise the same
5 control over these employees as they do over the local
6 people.

7 I feel that the applicant
8 should make every effort to have as many summer recreational
9 activities as possible, available for his personnel at the
10 campsites, both indoors and outdoors - softball, volleyball,
11 horseshoe pitches, et cetera, are just a few of the many
12 activities that provide for some recreation and relaxation
13 to the employees. No canteens were provided during the
14 Haines-Fairbanks pipeline construction, nor were any
15 recreational activities available.

16 The hydro project had some
17 indoor recreational activities that surely kept many of the
18 employees occupied after duty hours. During previous con-
19 struction periods, the hotels, motels, and lodges along the
20 route certainly increased their liquor sales, but no serious
21 problems resulted.

22 The RCMP at Haines Junction
23 had a staff of two during the winter months and three during
24 the summer. They covered the Haines Road and north Alaska
25 Highway area. No additional staff were required during the
26 construction periods. Their caseload did not increase, other

1 than would normally be expected by any change in population.
2 I was a Justice of the Peace in this area for many years.
3 I can speak with some knowledge and experience in this
4 regard.

5 One area of concern to me is
6 the lack of medical facilities along the North Highway.
7 There is one health station at Haines Junction staffed with
8 one nurse and one trailer unit at Destruction Bay and Beaver
9 Creek. One nurse covers these latter two stations. Any
10 serious injury or medical problem requires evacuation to
11 Whitehorse. Beaver Creek, two hundred and eight-five miles
12 from Whitehorse, has an ambulance service maintained by the
13 Department of Public Works. Serious medical cases are
14 evacuated by air.

15 With such a large work force
16 as proposed by the application, it will be essential to
17 provide additional services. Prior to electricity being
18 made available in Haines Junction during the mid '50's, most
19 people in the area used wood as a heating fuel. When Yukon
20 Electric installed its plant, most residents switched to
21 oil fired furnaces as this was a much more reliable and
22 efficient heating system.

23 Today, most of our community
24 rely solely on diesel fuel for heating. With the increase
25 in the cost of heating fuel over the past few years, it is
26 becoming very costly. Many business places find it necessary

1 to close during the long winter season as they cannot meet
2 the expense during the slack business season.

3 A considerable number of
4 people are everting and using wood, at least to supplement
5 their heating system. There are, however, some serious
6 implications in using wood. Insurance companies are very
7 reluctant to insure premises that use wood as a heating
8 fuel. This is causing considerable difficulty to many
9 people whose investment requires that he be insured. Wood
10 is indeed in plentiful supply along the North Highway. It
11 has the added advantage that many people can get it them-
12 selves, however, if a person was required to buy wood at
13 over fifty dollars per cord, it would be as expensive as
14 oil and not nearly as convenient.

15 Many of our homes now have
16 water and sewer and require a reliable heating system to
17 prevent freezeup. The applicant has stated that natural
18 gas will be made available to all communities along the
19 highway at the same price as that paid at the Alberta
20 border, should the pipeline proposal be granted.

21 To me, this is one of the most
22 appealing features of the pipeline proposal. It would
23 provide an assured supply of heating fuel at rates comparable
24 to southern Canada. To my knowledge, this would be the first
25 time that Yukoners had equal rates to southern Canadians.
26 The applicant has stated that the distribution of natural

Ms. E. Watson

1 gas could be by local business people, companies, or by
2 municipalities if they should so choose.

3 To me, this is another plus
4 in favour of Foothills' application. I cannot but look
5 with favour on natural gas being made available to all
6 Yukon communities at the same rates. In the past, almost
7 all small industry in the Yukon has been limited by the fact
8 that a reasonably priced source of energy was unavailable.
9 Should natural gas be made available, all Yukon communities
10 could look forward to establishing an industry and to be
11 competitive with the rest of the territory.

12 I certainly realize that this
13 would not happen all at once, but it would allow communities
14 and businesses to plan for the future with the assurance
15 that there was a supply of energy available, should they
16 wish to take advantage of it. The establishment of small
17 industries in local communities could do much to provide
18 permanent year round employment to our people.

19 I'm not sure whether the
20 members of the Inquiry are aware that the Government of
21 Yukon provides an Electrical Equalization Grant to all
22 residents of the territory that own their own home. In my
23 case, this grant amounts to about twenty-eight dollars per
24 month during the winter. I think business establishments
25 are granted a rebate of around fifteen per cent. The YTG
26 has stated that this fund will be depleted in about two

1 years and that no alternate source of revenue has yet been
2 established to replace it.

3 This has to be but one more
4 reason to look favourably at the possibility of having
5 natural gas being made available by the Foothills' proposal
6 to build a natural gasline through the Yukon.

7 The applicant's proposal to
8 establish pumping stations at Haines Junction and Beaver
9 Creek with permanent employees, would be most welcome to
10 the business and social life of our community. To some
11 members of the Inquiry, twenty-two additional families may
12 not mean much, but to small communities, their presence
13 would certainly have a very beneficial effect in almost
14 every aspect.

15 The additional revenues that
16 would result to the Territorial Government would most surely
17 assist the Yukon. The same could be expected by local
18 government agencies. No other project in the Yukon's
19 history offer so much that would benefit the territory and
20 all its people.

21 The applicant's proposal to
22 closely follow the Alaska Highway has many advantages over
23 any of the other proposed pipeline routes. Firstly, it
24 closely follows the already established highway route and
25 as such, would do little to damage the environment along
26 the vast majority of the route. The Canol pipeline ran to

1 Watson Lake in the southern Yukon and the North Canol line
2 ran to the northern Yukon boundary at Mile 1220. Haines-
3 Fairbanks pipeline ran from Haines Junction, also closely
4 following the highway corridor. The CNT land line right-
5 of-way also followed the Alaska Highway and in many cases,
6 still does.

7 During the past, there has
8 been over eight hundred and fifty miles of pipeline right-
9 of-way through the Yukon that has had the actual pipe
10 removed and the facilities and stations either sold or
11 removed. I have had the opportunity over the past many
12 years, to fly over these routes. In the case of the Watson
13 Lake section of the Canol in the north Alaska Highway
14 section, it would be very difficult to determine that a
15 pipeline ever existed or that there had been twelve pumping
16 stations located along those two routes.

17 With the exception of some
18 abandoned vehicles and some of the communications line, it
19 would also be difficult to tell that a pipeline was in
20 place to Norman Wells. I fully realize that none of these
21 pipelines required the disruption to the local environment
22 that the applicant's proposal will entail, however, it should
23 also be realized that they required considerable clearing of
24 timber and removal of cover to provide a suitable right-of-
25 way.

26 The fact that this proposal

1 will require excavation to bury the pipe will certainly cause
2 an unsightly mess during the trenching and pipe laying.
3 This is unavoidable if the project is to proceed. During the
4 first few years after the line is covered, the scar will
5 certainly be very evident.

6 I've had the opportunity to
7 observe other buried pipelines in both Canada and the U.S.
8 and in all cases, it is almost unnoticeable after reseeding
9 and several years of regrowth. From my experience with
10 right-of-ways through the Yukon, I have no doubt that the
11 same would apply.

12 During the years of operation
13 in the Haines-Fairbanks line, it was necessary to keep
14 equipment and men working every year to ensure that the
15 regrowth did not prevent access to the right-of-way. In
16 many areas of the Yukon, it was necessary to apply defoliant
17 to keep the right-of-way clear. This was always done under
18 supervision of the Department of Fisheries and Forestry.

19 To my mind, the applicant's
20 proposal will not do near the damage to the environment that
21 the construction of the Alaska Highway did. There was little
22 or no concern for the environment at that particular time
23 and yet no real damage was done to the territory. Indeed,
24 it was the best development the Yukon has ever had. I find
25 it very difficult to accept the fact that any serious
26 damage could result to the Yukon as a result of a pipeline

1 down the highway corridor.

2 Today, we have the Department
3 of the Environment people in the Yukon who are constantly
4 on the alert, to ensure that local residents abide by all
5 the regulations that are now law. I feel confident that
6 our governmental agencies responsible for the control of
7 the environment, fisheries and wildlife, are both capable
8 and equipped to ensure that their regulations are followed
9 and that the pipeline people will co-operate to the fullest
10 extent.

11 One of the things that I
12 often notice as I drive through parts of southern Canada is
13 the hydro transmission lines and their right-of-ways. I
14 consider these unsightly but also realize that at the present
15 time, they are very necessary. I do not believe that a
16 pipeline right-of-way through the territory would be so
17 unsightly or evident as to bother residents or visitors in
18 our territory.

19 Secondly, the fact that this
20 is a natural gas line proposal and not a multi-products or
21 an oil line, that any possible damage that might occur as a
22 result of a rupture, would not have any real or serious
23 pollution factor. The only danger would be from explosion
24 or fire and with the buried line, I feel sure that such
25 possibilities are quite remote. Fire could cause damage to
26 wildlife and while I do not minimize the effect this would

1 have, I also feel sure that precautions can be taken to
2 keep this danger to a minimum. I have heard concern
3 expressed that the noise from the compressor stations would
4 affect the wildlife in the area. During my years on remote
5 pumping stations in the Yukon, we always had to take pre-
6 cautions to ensure that animals were prevented from entering
7 the compound.

8 I personally many times have
9 observed foxes in front of the heat discharges from our
10 electrical generation plants, where the noise level was
11 quite high at such close range. I do not think that this
12 would deter or even seriously annoy many animals or birds.

13 Once again, this is what
14 makes Foothills' proposal to follow the highway corridor,
15 so much more acceptable. With few exceptions, there would
16 be little more damage to the wildlife than has already
17 occurred by the building of the highway. I know of no
18 area in the immediate vicinity of Haines Junction that the
19 pipeline would either damage or where wildlife would be
20 seriously affected.

21 During the operation of the
22 Haines-Fairbanks pipeline, we had many occasions to work
23 through the Sheep Mountain area on major relocations of
24 the eight inch pipeline that required heavy equipment and
25 pipelayers. Our activities did not seriously disrupt the
26 sheep. They would move away from the immediate area during

Ms. E. Watson

1 a work day and be there when we came back in the morning.

2 While we were given special
3 permission to carry firearms while walking the pipeline,
4 I am not aware of any instance where this privilege was
5 abused. Some concern has also been expressed because of
6 possible damage to the pipeline because of earthquakes.
7 To my knowlege, only once in my time in the Yukon, has a
8 tremor been felt. This was during the Alaska quake that did
9 such damage to Anchorage, Alaska. This quake did no damage
10 to the Haines-Fairbanks pipeline, even to the buried section
11 running through Alaska, where the effects of the quake
12 were much more pronounced.

13 Once again, the fact that this
14 proposal is for a natural gas line, I cannot take the earth-
15 quake very seriously. Considerable concern has been expressed
16 that the pipeline proposal should it be approved, would
17 seriously affect the Yukon Indian people. At one time, not
18 so long ago, this may have been true, but today, our young
19 Indian people are as capable as their white counterparts to
20 take advantage of the opportunities that may become available
21 should the project be approved.

22 In many cases, much more so.
23 The Indian Affairs Department supplies the funding to native
24 groups to participate in almost every endeavour that they
25 wish and feel will assist their people. Young white residents
26 still have to go to the banks or to the Federal Industrial

1 Development Bank to obtain funds to take part in private
2 enterprise. This is a fact that is often overlooked in the
3 emotional part of the issue.

4 In the matter of the Indian
5 land claims, this is a political issue that is the responsi-
6 bility of the Federal Government. In my opinion, the land
7 claims should have no bearing on the feasibility of
8 establishing whether the Alaska Highway pipeline proposal
9 is a viable alternative to other suggested pipeline routes.

10 Should this route be chosen,
11 the land claims can be settled when the claims of the Indian
12 people have been clearly defined and accepted by the
13 Canadian Government.

14 The question of a Yukoner has
15 often been raised. I feel that anyone qualified to vote
16 in the Territorial election, should qualify as a Yukon
17 resident for employment purposes on the pipeline. We make
18 exceptions when it comes to appointing Commissioners. I
19 think the outside hiring policy proposed by the applicant
20 will do much to alleviate the transient worker problems.
21 The local hire-first is also appealing. Should the
22 applicant proposal be approved, then the success of the
23 project is going to depend on the communications established
24 between the applicant, the prime contractors and governments.

25 The absolute lack of communi-
26 cation between Federal and Territorial Governments is historic

Ms. E. Watson

1 both at the top and through many of the lower levels as
2 well. There are going to be many government agencies that
3 the applicant and the contractors are going to have to deal
4 with and they cover just about every field of government.

5 In order that the project
6 proceed with adequate control by government over the environ-
7 ment, wildlife, manpower, et cetera, and yet allow the
8 applicant and his contracting people to operate with a
9 maximum efficiency, it is going to be absolutely essential
10 that some on-the-spot authority be established in the Yukon.

11 This cannot be someone in
12 Ottawa. While it is no doubt accepted that this is where
13 the power lies, it would be disastrous if there was not
14 someone appointed that would be located on site with the
15 authority required to make decisions. What I am suggesting
16 is that a Commission or a Czar be appointed to co-ordinate
17 all these activities and allow the project to proceed with-
18 out getting all bogged down by well-meaning bureaucrats and
19 empire builders.

20 There could well be several
21 of these types of co-ordinating levels, but no doubt the
22 most essential would be the group that was responsible
23 for the right-of-way and the actual pipeline in station
24 construction phases.

25 I also feel that the YTG
26 should have a high profile at any level as it is responsible

Ms. E. Watson

1 for some of the land use - taxes for fuels, licencing,
2 et cetera. So often in the past, Crown corporations and
3 other governments tend to bypass YTG, who are then left
4 to pick up the pieces in order to abide by their legislation.
5 One area of concern expressed by many people in this area
6 is the possible overlapping of the two large construction
7 projects, namely the pipeline and the Alaska Highway paving.

8 From my observation and infor-
9 mation, the Haines Junction-Burwash section will not be
10 affected by the highway paving program, however, it is going
11 to be essential that these two activities are also co-
12 ordinated and have a high degree of top level communication.

13 To date, the applicant has
14 done a good job of informing local communities, people in
15 local government agencies, as to the pipeline program and
16 its effects. The company has outlined areas where local
17 businessmen can participate if they so desire and in general,
18 I feel its representatives should be commended in their
19 efforts to keep the public informed.

20 Certainly, nothing like this
21 has ever happened in the Yukon before. During the construc-
22 tion of the Haines-Fairbanks pipeline, the Federal Govern-
23 ment appointed one man, Magistrate A.C.L. Adams, as Pipeline
24 Co-ordinator. Mr. Adams had no real on-the-site authority
25 and did not have representatives at the project. He was
26 largely responsible for paper flow between governments and

Foothills' proposal would require that more workmen would be involved than in any project other than the Alaska Highway. It should also be recognized that the applicant proposes to schedule the progra

1 over a five year period, from 1979 to 1983. It should also
2 be noted and taken into consideration, that an estimated
3 forty thousand workmen in military were involved during
4 the construction of the Alaska Highway in its ancillary
5 projects.

6 This, during a two year period
7 in comparison, makes the applicant's project look small.
8 With today's technology, communication and the consideration
9 given for the welfare of the community and its people, this
10 project should not have any serious or lasting effects that
11 would be to the detriment of Yukon people.

12 During the applicant's visit
13 to the community, there was very little opposition expressed
14 in public to the pipeline proposal. In my personal conver-
15 sation with a great many local people, I have not found
16 any real opposition to the proposal. Business people almost
17 wholeheartedly welcome the project. Environmentalists and
18 wildlife people are justifiably concerned that every pre-
19 caution should be exercised to ensure that the environment
20 and wildlife are protected.

21 I personally agree that every
22 consideration be given in this regard and feel confident
23 that our government will ensure that the applicant and his
24 contracting personnel will be continually supervised to
25 see that proper procedures are followed and protection main-
26 tained through the project.

The effect that approximately two hundred permanent employees would have on our communities, particularly the small ones, would be very positive. The assured source of natural gas at reasonable prices would certainly be a major benefit to all the territory. I feel that it is absolutely essential that the Federal Government

Ms. E. Watson

1 appoint an on-the-site Commissioner to co-ordinate all the
2 pipeline activities and with the power to act over all govern-
3 ment agencies during the term of the pipeline project.

4 That concludes his brief.

5 MR. CHAIRMAN: I'd like to thank
6 for of all, Ronnie Watson for writing the brief and you for
7 presenting it. I feel it would be unfair to ask you to answer
8 questions on -- when the brief was offered by someone else,
9 however, if you'd like to volunteer to attempt them, I would
10 be happy to direct them at you.

11 MS. WATSON: Well, I think if there
12 are any questions, you could possibly direct to Mr. Watson,
13 I could give you his address and that if there is any further
14 information you wish from him, I feel that I'm not quite
15 qualified to answer any questions especially on this, seeing
16 as I wasn't the author.

17 MR. CHAIRMAN: I fully understand.
18 Would you give his address then to either myself or Mr.
19 Timmermans --

20 MS. WATSON: Okay, I'll do that.

21 MR. CHAIRMAN: -- if any of the
22 Panel have questions, we can direct them to him. Thanks very
23 much.

24 MS. WATSON: Thank you.

25 MR. CHAIRMAN: Do Foothills have
26 any comments on the brief?

Mr. L. Chambers
Mr. L. Bouckhout

1 MR. BOUCKHOUT: No, Dr. Hill, we
2 don't.

3 MR. CHAIRMAN: A question for you
4 on the material on the brief.

5 MR. CHAMBERS: Mr. Bouckhout, in
6 the presentation you just heard, if my hearing is correct,
7 the pipeline -- the multi-products pipeline -- in Alaska,
8 the Haines-Fairbanks pipeline is buried. Has your company
9 looked at any of the effects of a buried -- that buried
10 pipeline in Alaska, because it is in a permafrost area?

11 MR. BOUCKHOUT: Mr. Chambers,
12 in terms of the environmental matters per se, we haven't.
13 We have looked at the pipeline in its entirety in fact, in
14 attempts to assess the condition of the right-of-way, the
15 condition of the line itself, the possible implications of
16 the line in terms of utilization or in terms of salvage or
17 whatever, which is relevant to our own proposal.

18 But, we haven't done anything more
19 in that in terms of any detailed assessment of the line in
20 Alaska to my knowledge.

21 MR. CHAMBERS: The only concern I
22 had was with possible effects of subsistence that we were
23 talking about earlier, where you had the warm pipeline in
24 permafrost and following up that, is another question also.
25 There was a statement and we'll direct the question to Mr.
26 Watson on it -- on the sheep on Sheep Mountain in the con-

Mr. L. Chambers
Mr. L. Bouckhout
Mr. B. Trevor

1 struction of that right-of-way at Sheep Mountain. I was
2 wondering if you'd followed that as to -- or if you are
3 familiar with the time of year that that particular piece of
4 right-of-way had gone around that corner of Sheep Mountain.

5 MR. BOUCKHOUT: I'm not aware of
6 exactly when that was built, the Sheep Mountain portion. Mr.
7 Elwood indicates that he thinks the entire line was -- the
8 bulk of the line was built in the wintertime, but I'm really
9 not sure on that.

10 MR. CHAIRMAN: I believe the
11 reference was to a relocation of that particular part of
12 the line.

13 MR. BOUCKHOUT: Oh, I'm sorry,
14 I misunderstood the question.

15 MR. CHAIRMAN: Mr. Trevor?

16 MR. TREVOR: We are aware in our
17 own dealings with the American authorities that the Army
18 Corps of Engineers kept very detailed records of the work
19 they did and I would suggest that it might be worthwhile
20 exploring the existence of this kind of material.

21 MR. BOUCKHOUT: Yes, Mr. Trevor,
22 we have some of those details. We have requested and
23 received some of them. In fact, one of the reports I gave
24 yesterday was from that exploration for those kinds of
25 documents. I think -- I'm not sure where they resided. I
26 believe the General Services Administration has some of it as

Mr. B. Trevor
Mr. L. Bouckhout
Mr. J. Elwood

370

1 well.

4 MR. TREVOR: I also have a
6 supplementary question in terms of your having looked at the
8 existing pipeline and in terms of your route being precisely
10 over the existing right-of-way, what plans do you have for
12 reclamation or removal of the existing facilities?

14 MR. BOUCKHOUT: No plans, Mr.
16 Trevor, at the moment, primarily because the status of that
18 line is not yet resolved. I believe it, to my knowledge,
20 it is in the process of being disposed of in one manner or
22 another. I'm not sure what precisely the status is, but it
24 would depend upon whether in disposal, it would be used for
26 a similar or some other purpose, were to be moved all to-
gether. That's one of the implications of our potential
use of that right-of-way for our own system.

16 MR. TREVOR: Thank you.

17 MR. CHAIRMAN: Do you have any
19 concept of actually using the line as suggested in the
21 brief, of reversing the flow and actually supplying fuel to
23 the Yukon by U.S. ports?

21 MR. BOUCKHOUT: Mr. Elwood will
23 answer that.

23 MR. ELWOOD: Yes, one of our --
25 well, our sponsor company, Alberta Gas Trunk Line, investi-
27 gated in this and I was part of the group that was determin-
ing what potential uses might that line be put to. We did

1 discuss the possibility of using it to bring product from
2 Fairbanks down to the Yukon. We discussed the possibility
3 of using part of that line to take natural gas down to the
4 Haines, Alaska area and we discussed the possibility of
5 salvaging that pipe.

6 So those were the three things that
7 we looked at. I don't believe that there was any decision
8 taken on it. At the time we were considering that, the
9 pipeline was about to be put up for salvage bids. Subsequent
10 to that, the GSA put a hold on the request for salvage
11 bids and we have not decided yet whether or not we would
12 put in a bid or whether it would be for salvage or for
13 returning the line to service.

14 MR. CHAIRMAN: So if I understand
15 you correctly, let me put it in a question form. Does the
16 possibility still exist then of utilizing the existing line
17 in some manner and also constructing the forty-eight inch
18 line in parallel with it on the same right-of-way or adjacent
19 to it?

20 MR. ELWOOD: I couldn't say for
21 sure that the -- as far as we're concerned, that the possi-
22 bility still exists. There are some problems with putting
23 the line back into service to get it upgraded to today's
24 standard. I don't know what our decision was, whether or
25 not that would be feasible or whether we have concluded that
26 it would not be and therefore, in our opinion, there would

Mr. J. Elwood

1 be no possibility of putting it back into service.

2 I do know we discussed it. I don't
3 know what the decision was.

4 MR. CHAIRMAN: Well, if it were
5 possible in terms of standards and so on, it would be an
6 efficient method of transportation of fuel would it, or --

7 MR. ELWOOD: Oh yes, as a pipeline,
8 it's a very efficient method of transportation. One would
9 have to do a -- of course, obtain a supply to put in the
10 other end and a market for the product coming out this end,
11 but there is that possibility and as far as I know, it's
12 just undetermined yet, whether or not it could economically
13 be put back into service, given that it has to be brought
14 up to, brought up to a better standard.

15 MR. CHAIRMAN: What implications
16 would there be to your present right-of-way alignment if
17 in fact, the pipeline did -- was recommissioned?

18 MR. ELWOOD: I would think the
19 first thing if we were to reuse that right-of-way and widen
20 it for the forty-eight inch pipeline, there are in a number
21 of places along that right-of-way I recall from flying
22 over it, a windrow of brush piled there, presumably left
23 from the original clearing of the right-of-way.

24 The pipe itself is lying more or
25 less in the centre of that right-of-way. It would have to
26 be taken off to one edge to allow for construction of the

Mr. J. Elwood

1 forty-eight inch pipe. It would have to be buried when it
2 went back into service and I think there are some regulations
3 then, respecting how close it could be to the forty-eight
4 inch. It's a relatively short distance -- a few feet away
5 is all that's required to space the pipeline.

6 MR. CHAIRMAN: Could I ask a
7 question. Is it because of the -- of an existing NEB
8 regulation that the pipeline would have to be buried?

9 MR. ELWOOD: Well, it was our
10 feeling that for us to take over the pipeline now, as I
11 recall, it was our feeling at the time that to put it back
12 into service, we would likely be requested by the National
13 Energy Board to upgrade it to existing standards.

14 MR. CHAIRMAN: And that includes
15 burial?

16 MR. ELWOOD: It wouldn't necessar-
17 ily include burial, that you can run above-ground pipelines
18 here, but in areas where burial is suitable, that would be
19 the preferred route or method of --

20 MR. CHAIRMAN: And why is that?
21 I walked some of that line and the -- it appeared to be a
22 fairly efficient way of placing a pipeline on a potentially
23 difficult terrain. The permafrost seemed to be intact,
24 the soil was very stable and so on, except in a few situations
25 Why would it be your preference to utilize an unknown
26 technique when you -- when there exists the technique there

1 that seemed to be successful?

2 MR. ELWOOD: Well, as I say, Dr.
3 Hill, where it's suitable, the preferred mode is buried.
4 In permafrost, of course, you're into a different situation.
5 It's not an unknown technique to bury pipelines. That is
6 the common practice. Putting them above-ground is really
7 the uncommon thing to do here.

8 MR. CHAIRMAN: Right. Yes. But
9 in permafrost, it --

10 MR. ELWOOD: Right, in the
11 permafrost areas toward the north end, one would have to,
12 I would assume, make some determination again of the thaw
13 settlement. It seems that the line has worked out reasonably
14 satisfactory just being on the ground. It may be that you
15 could leave it there or -- I really couldn't say what the
16 regulations -- the Energy Board might use to cover that
17 situation.

18 It was just our feeling at the
19 time, that we would likely have to upgrade it, bury it where
20 that was a suitable mode of design for a pipeline and --

21 MR. CHAIRMAN: Do the -- refresh
22 my memory -- do the current NEB regulations call for a
23 buried line in -- or is there an out in the current regulatio

24 MR. ELWOOD: Not to the best of
25 my knowledge. It's just the common practice -- the accepted
26 practice from a point -- preferred by the operating company

Dr. Hughes
Mr. J. Elwood
Mr. C. Wykes
Mr. L. Bouckhout

375.

1 because it puts the line out of sight and out of danger.

2 MR. CHAIRMAN: Any other points?

3 DR. HUGHES: Just one minor
4 point here. Could you come up with a figure for us, of
5 the total width required if you were to use to retain --
6 put it this way -- if the existing products line were to
7 be retained and you were to follow closely, what would be
8 the minimum width that you could get by with? That is,
9 could the right-of-way for --

10 MR. ELWOOD: Just for a minute here by
11 looking in the code for the spacing of them --

12 MR. CHAIRMAN: Are there any
13 other questions while that is being looked up? Mr. Wykes?

14 MR. WYKES: I gathered from the
15 appendix to Mr. Watson's brief, that the deterioration of
16 the pipe and the frequency of spills, was much larger in
17 the area near Haines, Alaska than anywhere else on the pipe-
18 line.

19 I stand to be corrected if that
20 was a misunderstanding, but if that in fact were so, are
21 you aware of any reasons why that might have been the case?

22 MR. BOUCKHOUT: I think partially,
23 and I'm going on my recollection of what was said as well,
24 Mr. Wykes, that there was no coating or wrapping of the
25 pipe at that time and I believe in the vicinity of Haines,
26 Alaska, it might have been a buried line and that may have

Mr. Bouckhout
Mr. C. Wykes
Mr. J. Elwood

1 had some implications and external corrosion, hydrolysis
2 and so on.

3 MR. WYKES: So, it was not
4 wrapped in that area, but was it wrapped in the rest of
5 the Yukon?

6 MR. BOUCKHOUT: No, I don't
7 believe it was, but in the rest of the Yukon, it was above-
8 ground so you wouldn't have quite the same activity of the
9 soil chemicals and so on, working upon it above-ground as
10 you would below ground.

11 The -- part of the requirement
12 for coating and wrapping is for corrosion protection. You
13 dope the line, you coat it, you wrap it and also, cathodic
14 protection. I believe in the brief, they mentioned there
15 was some cathodic protection, but there was no coating or
16 wrapping of that line.

17 MR. ELWOOD: The Canadian
18 Standards Code requires that twelve inches of clearance
19 between a pipeline in underground -- any other underground
20 structure -- one foot separation between the two.

21 I believe our own operating
22 experience has shown that's not too practical where you're
23 dealing with two separate pipes and we put them a little
24 farther apart -- two to three feet -- just for ease of
25 handling the thing.

26 DR. HUGHES: Well I gather from

1 that then, that there is no very significant extra width
2 required above what you proposed for your forty inch pipe
3 -- forty-eight inch pipeline -- in order to accommodate also
4 the existing line.

5 MR. ELWOOD: No, there wouldn't
6 be. As an example, I could cite this winter, we were
7 building a loop to one of our existing pipelines in Alberta
8 -- a thirty inch laid beside a sixteen inch. We widened
9 the right-of-way ten feet for that to put --

10 DR. HUGHES: Thank you, that's
11 the order -- that's close enough for my purpose.

12 MR. BOUCKHOUT: I think perhaps
13 just to add to what Mr. Elwood has said, Dr. Hughes, that
14 of course, the implication is that the existing line is in
15 the centre of the right-of-way. It is not at one edge and
16 if you were to install the forty-eight inch, leaving the
17 existing line in operating condition, that unless it were
18 removed, you would have to have some adjacent room to in-
19 stall the forty-eight inch and additionally, have a safety
20 factor -- a safety distance so that you aren't working in
21 very close proximity to the existing line.

22 DR. HUGHES: The fact that it
23 isn't buried would present some fairly high risk of
24 mechanical damage, would it not, if you're not operating
25 there?

26 MR. BOUCKHOUT: Yes sir, it would.

Mr. L. Bouckhout
Mr. Beanlands
Mr. J. Elwood

1 It would. In normal operating pipeline experience, over
2 half of any failures are as a result of mechanical disruption
3 of the line through equipment and so on, backhoes,
4 bulldozers and so on, accidentally disrupting the pipeline.

5 MR. CHAIRMAN: All right,
6 questions from the Panel staff on the content of the brief?

7 MR. BEANLANDS: This question
8 refers to what the Panel member was getting at in terms of
9 pipeline integrity.

10 Can you give me some idea of what
11 problems a forest fire poses for a) and underground line
12 and b) a surface line, or do you have any background, any
13 data statistical/^{or}otherwise on problems from forest fires?

14 MR. ELWOOD: A forest fire
15 doesn't really pose any hazard at all to an underground
16 buried gasline. I can --

17 MR. BEANLANDS: What about a
18 surface line?

19 MR. ELWOOD: I know of one area
20 in Alberta on the Prairies where there was a grass fire
21 over the pipeline. We were concerned about putting out the
22 fire. We were not concerned about the pipe in that in-
23 stance. The heat generated was -- it generally rises. It
24 doesn't penetrate the earth, so there was no real danger.
25 The depth of burial there was about three feet -- thirty
26 inches to three feet. I can't recall an area in Alberta

1 where a forest fire has gone over the pipeline, but I know
2 in several discussions with all our operating people, they
3 don't see that as any danger at all to the pipe.

4 MR. BEANLANDS: Thank you.

5 MR. CHAIRMAN: Are there any
6 comments from the floor on the brief presented? I'd like
7 to then close off discussion on that brief and thank Ms.
8 Ernie Watson again for presenting it.

9 I have a couple of points I'd
10 like to clarify. One was in our first meeting here in White-
11 horse, there was mention that Westcoast was stringing pipe
12 across the Peace River was it, this summer -- is that activity
13 underway at the present time? Can it be viewed?

14 There was an offer that we could
15 have a look at that particular operation and I was wondering
16 what stage it was at.

17 MR. BOUCKHOUT: Dr. Hill, I
18 don't really know what stage it's at now. We'll certainly
19 find out I guess, tomorrow morning, probably, as soon as
20 possible and let you know what stage they're at.

21 MR. CHAIRMAN: Okay. The other
22 point related to a discussion yesterday on the Ibex Pass
23 where we determined that you were considering alternatives to
24 the present alignment in the Squanga Lake area and the Ibex
25 Pass area.

26 You suggested that you would have

1 this analysis done by the July hearings. Would it be possible
2 for you to briefly outline the alternatives that are under
3 discussion and give us some alignment in order that we could
4 be prepared for the discussion in July?

5 MR. BOUCKHOUT: Yes sir. Would
6 you like me to discuss that right now?

7 MR. CHAIRMAN: Yes, it would be
8 best for me if we could do it on an alignment sheet so I can
9 follow it. I guess it's a little bit of a problem for
10 everybody in the audience, but maybe it would be best if you
11 drew the alignments out or if you have a plan, all right, or
12 draw them out on topple sheets, maybe we can work on this
13 table here.

14 MR. BOUCKHOUT: Yes sir, I think
15 the realignment considerations were bascially for the
16 Ibex. I don't think we had discussed any major realignment
17 consideration for the Squanga Lake area. There certainly may
18 be some minor -- more minor alignment considerations, par-
19 ticularly in the vicinity of Squanga Lake itself in reference
20 to the Squanga Lake shore.

21 But the major consideration for
22 the alignments was really in the Ibex Pass area.

23 MR. CHAIRMAN: Right, so could
24 you draw them out on one of our maps here?

25 MR. BOUCKHOUT: Yes we will.

26 MR. CHAIRMAN: I'll explain these

1 alternatives generally. The tentative layouts is outlined on
2 maps by -- will be made available by Foothills, so anybody
3 wishing to have a look at them, we'll have them in the office
4 tomorrow.

5 Mr. Bouckhout, is that all right?
6 Will you supply copies of those maps to us today, so anyone
7 who wishes to have a look at them can have a look at them
8 tomorrow?

9 MR. BOUCKHOUT: Yes, what we
10 have, Dr. Hill, in the office is a worksheet map which we
11 have on the wall with these lines on them. We have no pre-
12 pared maps, but we will prepare a more definitive map for
13 you and make it available to you by this evening.

14 MR. CHAIRMAN: Okay, that would
15 be fine, but at the present time, I'll just for the record
16 -- I'll just briefly describe the alternatives.

17 The alternative would deviate
18 from the existing alignment at about Mile 242 and follow
19 the highway reasonably closely, past Takhini, staying south
20 of the highway and at the junction of the Klondike Highway,
21 the alternative split -- one alternative would be to cross
22 the road and the Yukon River and go north of the Yukon River,
23 following about north of (Koocher) Creek and reconnecting
24 the main line at about Mile 290.

25 The other split at that point
26 would be to go south and cross the Fish Lake Road and re-

1 attach to the main line at about Mile 268.

2 Are there any questions on
3 that particular point, that Ibex Pass alternative? We have
4 about half an hour to our scheduled quitting time. I
5 believe the Panel staff had a few more questions to put to
6 you. Would you be willing to field questions for a short
7 period of time?

8 MR. BOUCKHOUT: Yes, certainly.

9 MR. CHAIRMAN: Mr. Low?

10 MR. LOW: Mr. Bouckhout, in
11 Volume 5B of your public environmental statement, there's
12 a chapter in there entitled 'Special Programs'. An even
13 smaller paragraph on environmental inspectors. I am sure
14 you realize that the -- all the concerns and recommendations
15 that are being put forth in this exercise, will be utterly
16 useless there is a high standard of inspection, however,
17 during that paragraph you state that there will be no
18 minimum requirements for choosing these inspectors and that
19 they shall be hired on the basis of their education,
20 experience and attitude.

21 Could you explain what you
22 mean by attitude?

23 MR. BOUCKHOUT: Well, in that
24 respect, Mr. Low, I think what we're really talking about
25 there is not that one necessarily be totally environmentally
26 oriented. In other words, in one strict discipline, without

Mr. L. Bouckhout

1 some concept of the project that once the construction
2 proceeds, the objective is in the best manner possible
3 under the conditions set down to proceed and to undertake
4 and complete the project.

5 Attitudes is a difficult thing
6 to discuss. Really I guess what I'm saying is, in the
7 description of how these people would be selected, I am
8 trying to say that it would not necessarily -- or the
9 criterion would not necessarily be a minimum of a Bachelors
10 Degree or a minimum of a Masters Degree or a minimum of
11 X number of years of experience. One, I think in terms
12 of having an inspector who will be effective, I think that
13 inspector must have the ability to relate not only to other
14 inspectors, both from our point of view and from the govern-
15 ment's point of view -- any government inspectors there
16 may be -- and to relate to the environmental concerns and
17 the environmental criteria. But to be effective, that person
18 is also going to have to be able to relate to construction,
19 to the construction project and the implications from that
20 perspective.

21 So I think what I was really
22 essentially trying to say is that what we would be searching
23 for as qualifications in an inspector is someone who has
24 relevant experience in various fields, both the construc-
25 tion field and the environmental field, not necessarily,
26 but in most cases probably would have a degree in one area.

1 The inspectors will have to
2 cover a reasonably wide range of concerns. In other words,
3 you would not necessarily on each spread, have one or two
4 or more inspectors who are specialists in only one very
5 narrow discipline. The inspectors would have to undertake
6 a training program wherein they would be acquainted not
7 only with the environmental criteria, the environmental
8 nature of the area and the particular area they would be
9 working in, but would also be acquainted with the construc-
10 tion aspects - how a pipeline is constructed.

11 What we're saying is, we're
12 preferably in searching for inspectors, find someone who
13 -- when they undertake this program, have some concept of
14 both to start with. I don't know that I really very well
15 explained to you, what my definition of attitude would be
16 but perhaps you can perceive from what I've said, how it
17 sort of fits into this.

18 MR. LOW: Well, it seems all
19 too easy that they could be chosen to be sympathetic.
20 That's the way it hit me when I read that paragraph.

21 For instance, what will the
22 Territorial Government be involved in, in setting up
23 qualifications or choosing inspectors, since they are
24 protecting their interests and not necessarily, the pipeline
25 interest.

26 MR. BOUCKHOUT: As I view it,

Mr. L. Bouckhout
Mr. D. Low

385 .

1 Mr. Low, the inspectors I'm speaking of there would be our
2 own company inspectors who would be charged with the
3 company function of fulfilling the requirements and
4 recommendations and guidelines of viewing construction as
5 it proceeds and reacting to circumstances as they develop.
6 There will be many cases wherein there may not be strict
7 guidelines or criteria in which -- for all situations which
8 might come about.

9 The inspectors are going to
10 have to be capable of being able to react to circumstances
11 and situations. I expect that what will happen as a
12 potential, that there will be other inspectors charged
13 from the regulatory agencies point of view of essentially
14 carrying out the pipeline inspection for the regulatory
15 agency who would perhaps in some cases, be parallel to our
16 own.

17 MR. LOW: What kind of control
18 would the inspectors have over pipeline construction
19 activities?

20 MR. BOUCKHOUT: Our inspectors,
21 particularly the senior inspectors on the spread and so on,
22 would have control all the way up to authority for shut-
23 down.

24 MR. LOW: Well, what would be
25 the sequence of events leading to a shutdown and how long
26 would it take?

Mr. L. Bouckhout
Mr. D. Low
Mr. B. Trevor

386 .

1 MR. BOUCKHOUT: A shutdown is
2 a very hypothetical situation. As a potential scenario,
3 I think we discussed it a bit yesterday. It might be best
4 to use that in order to describe it.

5 For instance, if construction
6 were proceeding and suddenly a very significant archaeolog-
7 ical site were discovered which would warrant in the
8 opinion of the professional archaeologist, cessation of
9 construction for that particular section so that no further
10 disturbance were created, then the senior inspector on the
11 spread would have the authority vested in him to shut down
12 construction at that particular site, virtually immediately.

13 MR. LOW: Right. What I was
14 getting at is you state that your inspectors in their
15 opinion that it be shut down, and a lot depends on their
16 attitude.

17 MR. BOUCKHOUT: That's correct.

18 MR. LOW: Thank you.

19 MR. TREVOR: In your evidence,
20 before the Social Economic Inquiry, you've indicated that
21 indeed, there are professions associated with pipeline
22 construction where a considerable pool has been built up in
23 Canada - welders, side boom operators and so on.

24 Would this not also be true of
25 pipeline inspectors and indeed, would there not be a pool
26 of such professional people to draw from?

1 MR. BOUCKHOUT: I think, Mr.
2 Trevor, there are professional people available for this
3 kind of undertaking. I think it should be realized that
4 the professional pipeline inspector -- the professional
5 pipeline environmental inspector -- is going to be a
6 relatively new breed.

7 This has not been on most
8 pipelines, a traditional thing. There have been inspectors
9 for various phases and various operations on pipelines,
10 traditionally for many years of course - welding inspectors,
11 even right-of-way inspectors, quality control inspectors,
12 and so on, but we are just now seeing a new era wherein
13 professional environmental inspectors or environmental
14 personnel are becoming involved in pipeline installations
15 as well as many other installations and many other under-
16 takings.

17 There are really no set criteria
18 for what are minimum requirements for an environmental in-
19 spector. There are I suspect and perhaps Mr. Elwood could
20 help me out on this, there are certain qualifications or
21 whatever for a welding inspector for instance, but I think
22 here we are to a degree, breaking new ground. In that
23 respect, we are essentially going to have to judge the
24 people on how good a job we feel they can do. They are
25 going to have to be fairly experienced people in many
26 cases, not people without any field experience or field

Mr. B. Trevor
Mr. L. Bouckhout
Dr. LaCate

1 comprehension.

2 MR. TREVOR: Well in that
3 case, do you anticipate any difficulty in finding such
4 people?

5 MR. BOUCKHOUT: Well I suppose
6 -- I don't anticipate any great difficulty in that respect.
7 I suppose one mitigating factor is going to be the fact
8 that -- it's going to be a factor of how much you're going
9 to have to pay him to get him.

10 MR. TREVOR: Am I to infer
11 from that, that you would be attempting to take personnel
12 away from existing agencies that might have the capability?
13 Including government agencies?

14 MR. BOUCKHOUT: Well sir, I
15 think we'll get them wherever we can get them.

16 MR. CHAIRMAN: Dr. LaCate has
17 a question.

18 DR. LaCATE: I have a series
19 of questions, Mr. Bouckhout, for either you or your staff
20 to try, dealing mainly with vegetation.

21 The first one is related to
22 rare plant species protection and the volume on your
23 environmental statement on Page 422 - it states that a
24 survey strictly devoted to discovery of rare species is
25 impractical. Although on Page 421, it is admitted that the
26 clearing of the line and subsequent construction may result

in destruction and hitherto, unreported plant species or
unique plant complexes.

MR. BOUCKHOUT: In terms, Dr. LaCate, of -- and I will turn this over to Dr. Vaartnou in a moment since he wrote that particular section, and is certainly much more familiar with it -- but in terms of the last point you established, certainly where they are known to exist, that would be taken into account.

I think and as I say, I will ask Dr. Vaartnou to comment on this -- I think the point is that to locate rare plant species, particularly in a forested area, is an endeavour which borders on the impossible but I would like to ask Dr. Vaartnou to comment if I might.

DR. LaCATE: I'm more concerned with the ones that have been identified, such as Sheep Mountain and (Singe) River Delta, whether there would be a survey there.

DR. VAARTNOU: Yes, I guess I remember back, 1967, '68, together with Dr. Neilson, Jim Neilson, I surveyed Sheep Mountain and we -- or really

1 he recovered I guess, if you remember at least three,
2 species what was not known existing, immediate vicinity of
3 Yukon or close by and some of them might still exist there,
4 was not recovered. But Sheep Mountain here is definitely
5 one area where we had to spend more time because we don't
6 know exactly what exists there.

7 But, we'll say ten years ago, it
8 was possible to recover at least three. Up to that point,
9 unknown species in Yukon and there might be more. As much
10 as I know according to (.....) , there might be
11 approximately fifty or sixty rare species existing on this
12 route. Where they exactly are going to be, but going to be
13 on the right-of-way or immediate vicinity.

14 This time we plan to recover and
15 expect to walk the line but not specifically for the purpose
16 of recovering rare species on old plant communities, but we
17 expect to know most -- I can't say I could recover every
18 species existing, because some of them, you have to go under
19 a microscope before you would decide what it is. Another
20 way, you take presses. If you compare the rare species what
21 are mentioned existing here, if you see that authors from
22 Sweden or authors from States or Canada, quite often they
23 have put different names on there.

24 For example, agropyrons. (.....)
25 glacier is so very, so mixed, which one is the new species,
26 which one is the rare species. Quite often is not known.

1 Take for example, agropyrons. You cannot see when one of
2 the wheat grasses -- is it separate species, is it localized
3 in Yukon? Well it is, but we plan to recover how extensive
4 those so-called rare species or rare plant communities are.

5 If they are very specific as I
6 mentioned, those three are in Sheep Mountain. We had to try
7 to avoid destruction of their habitat. Maybe if I could
8 request, they will relocate the line. It is not possible.
9 At any rate, we had to recover what's there and we're
10 planning to do it. Besides, I guess you realize that we are
11 planning to use as many as possible native species. Basic
12 native equal types to revegate the area.

13 So if it comes to the point to
14 revegate of the Sheep Mountain, I could visualize that we
15 are going to use the seed collected in the vicinity around
16 for that purpose or local equal types collected from there,
17 but we have in stock since 1970 -- '67, and we're employing
18 some of them right now. If it's not possible to use this
19 seed, we're planning to use shredding methods to establish
20 some of the species like agropyrons, which I mentioned,
21 but we don't expect and nothing has been demonstrated yet
22 to be able to grow viable seed, so we expect to use the
23 stolons and use them as material to start native land
24 community to irrigate.

25 We're not going to plan to build
26 the plant community there. We plan to help nature to restore

Dr. LaCate
Mr. L. Bouckhout

1 the self-supporting plant community where it is necessary.

2 DR. LaCATE: My next question
3 touched on some of that revegetation. On the environmental
4 statement again, it said that damaged cover would be
5 revegetated where necessary to prevent erosion in the long
6 run and also the cut surfaces will be revegetated where
7 necessary to protect against erosion by surface run-off.

8 Now the question I have, is could
9 you amplify on the types of situations where Foothills feels
10 revegetation will be necessary. Is it the whole thing or
11 is it river crossings, slopes? There seems to be little
12 explanation of how much revegetation is actually contemplated.

13 MR. BOUCKHOUT: In fact, Dr.
14 LaCate, we don't expect that it will be necessary in fact,
15 to revegetate the entire cut right-of-way. We feel that in
16 many cases, the vegetation, this will be based particularly
17 on assessment by professional plant ecologists such as Dr.
18 Vaartnou, that the existing vegetation will be in such a
19 state that it will be able to recover.

20 Our particular criteria and our
21 particular reason for revegetating as you've mentioned,
22 you've mentioned one of them and that's for deep-seateds,
23 particularly hydraulic erosion control. This would be
24 primarily with respect to slopes, river slopes, stream slopes,
25 other upland slopes where there is some potential for water
26 erosion to run down the slope. Depending on the severity of

1 the implication for erosion of this nature, geotechnical
2 means in those areas where it is felt necessary, would be
3 first employed to ensure that the control is instituted.

4 Revegetation is primarily a longer
5 term erosion control measure. Other areas which would be
6 revegetated are those areas where it's felt necessary for
7 aesthetic reasons for instance. We are dealing with the
8 developed corridor which is used for recreational purposes
9 and aesthetics becomes then a significant consideration in
10 that respect. Therefore, revegetation would be used in
11 those areas where it might be necessary for aesthetic
12 purposes where the natural vegetation may even have the
13 capability of returning but it might take some time - two,
14 three, four, five years that we want to immediately re-
15 establish vegetation, therefore, we would use the artificial
16 revegetation means.

17 We don't have in other words, a
18 precise mile-by-mile indication of exactly where we will have
19 to revegetate. Our program of providing seed is really aimed
20 at providing enough seed to virtually revegetate the entire
21 line. We don't feel we're going to have to, but what we're
22 attempting to do is be very conservative in overshooting the
23 mark.

24 DR. LaCATE: I'm thinking more
25 though, of say specifics on different kinds of communities.
26 The one I have in mind would be the peak plateaus or the bogs.

1 Now, you wouldn't be planning on
2 grass there would you?

3 MR. BOUCKHOUT: No, I will turn
4 that over to Dr. Vaartnou.

5 DR. VAARTNOU: I cannot visualize
6 that we try to plant grass where it's not naturally could
7 not be able to grow and we definitely visualize that we
8 might be able to use the threading method there. Collective
9 ...this replaces the existing layer, threading it, and
10 putting it back on the surface to establish exactly the
11 same kind of community that was there before.

12 This same thing happens to sedge
13 meadows and there isn't any better material than what is
14 there and you're free to use the materials. We're going to
15 do some testing this summer now. We're trying to demonstrate
16 that we are able to carry it out, that the meadows is known
17 as Cranberry Bogs . There is one way to say metal is used
18 and sometimes grass is on ... , but basically,
19 I think the same same principle as the revegetation growth
20 established in cranberry planting ...
21 and there cannot be anything else.

22 But we definitely had to avoid
23 the revegetation in the areas where the planted material
24 could prohibit or delay the natural vegetation...

25 DR. LaCATE: Another series on
26 the right-of-way clearing phase. Just a point of clarifi-

1 cation, your report says that non-merchantable trees or
2 brush, three inches or over in diameter will be burned or
3 cut and laid on the ground to stabilize the working surface.

4 Now, my question is, if it is
5 used as rip-rap on ground, will it be left lying or removed
6 and disposed of in some other manner?

7 MR. BOUCKHOUT: I think Dr.
8 LaCate, in normal circumstances, it would probably be left
9 lying on the ground for a couple of reasons. One, that by
10 doing so, it immediately forms a rip-rap cover for erosion
11 control and these kinds of things. Secondly, removal could
12 very well cause more damage than simply allowing it to lie
13 on the ground and rot in a normal course, thereby providing
14 nutrients back to the soil.

15 DR. LaCATE: And if burning is
16 planned during the summer construction, what will happen
17 during the peak fire season and if you end up with closures?
18 Will slash and debris be left on the right-of-way for any
19 length of time or --

20 MR. BOUCKHOUT: Yes, it could
21 potentially be. We have -- we are certainly aware of the
22 possibility of being prohibited from burning in certain areas
23 during peak fire season. In that case, the material would
24 be probably left lying until we were able to go back in and
25 burn the material.

26 DR. LaCATE: Just following up on

Dr. LaCate
Mr. L. Bouchhout

1 that, during periods of closure, could you amplify on what
2 fire protection suppression measures you would have along
3 the right-of-way during your construction?

4 MR. BOUCHHOUT: Along the right-
5 of-way, the major equipment is generally equipped with
6 spark suppressants, suppressors and so on. Additionally,
7 as part of our overall contingency planning, fire will be
8 taken into account as one of the eventualities which must
9 be planned for. In that respect, although the details are
10 not yet developed, we feel this being one of the areas where
11 details can be finalized at a later date.

12 The details would include pro-
13 vision of fire-fighting equipment, provision of trained
14 manpower, our own equipment in the event of a forest fire
15 in terms of bulldozers and so on, would be available. We
16 will additionally, be in constant contact with the local
17 forest service - the Yukon Forest Service and so on. These
18 are all components of the contingency plan; a fairly extensive
19 contingency plan to react to fire eventualities would be
20 developed and reviewed by again, by appropriate authorities
21 for their comments and consideration.

22 DR. LACATE: Perhaps the next
23 part of the question, I should go to Brian Trevor because of
24 my unfamiliarity with the situation up here, but can you
25 close down the operation entirely if the fire hazard is very
26 high and if so, how would that affect the operation?

Mr. B. Trevor
Dr. Hughes

397.

1 I know the Canada west coast in
2 B.C. I'm just wondering if that applies up here.

3 MR. TREVOR: The Superintendent
4 has that authority under local Territorial Government
5 ordinance to close down anything which he considers a major
6 hazard, yes.

7 MR. CHAIRMAN: Mr. Hughes has one
8 question.

9 DR. HUGHES: This stage of the
10 hearings has been designated as issue identification. One
11 possible issue that I haven't been able to sort of pin down
12 in my own mind as being an issue or not, is that of the
13 seismic hazard. I've looked at the submission of the Arctic
14 Gas pipeline panel, your own submission and I just haven't
15 been able to pin it down really whether it's an issue that
16 the panel should pursue further and it seemed to me that
17 for my own thinking, that it might be helpful to have either
18 yourselves or perhaps we could have a volunteer -- the
19 Alaska Highway Panel to look at a worst case situation just
20 to give us a scenario of what could happen.

21 I was thinking perhaps in terms
22 of something like a pipeline where it crosses the Slims
23 River Delta, where you have -- you're close to a major fault.
24 I can't picture in my mind whether we're looking at some-
25 thing like the kind of soil failures that took place at
26 Bootlegger Cove at Anchorage, in association with the earth-

1 quake there.

2 I think if we had a worst case
3 analysis of that sort and a sort of a scenario in laymen's
4 language that this may help us to decide whether this is an
5 issue or not. Is that something that could be done?

6 MR. BOUCKHOUT: I could perhaps,
7 Dr. Hughes, begin to answer your question and certainly Mr.
8 Jacobson or perhaps Mr. Claridge, who is with us here, could
9 give me a hand on it.

10 What I might say is that --

11 DR. HUGHES: I wasn't anticipating
12 getting this immediately, but something that your geo-
13 technical people and other advisers could work out for us
14 sometime prior to the July the 5th hearings so we'll know
15 how to weight this in our discussions during those hearings.

16 MR. BOUCKHOUT: Surely.

17 MR. CHAIRMAN: I'm not sure I
18 understand the scenario. Is it that on the Slims River,
19 there are soils which could liquefy or the hypothesis that
20 they could liquefy because of acceleration due to an earth-
21 quake and therefore flow and create a danger for the pipe-
22 line?

23 DR. HUGHES: Well that's the kind
24 of thing I was thinking of. It's also an area where there's
25 been a very major slide previously. That's another possi-
26 bility I suppose, is one of the kinds of things that could

1 happen and that was the kind of thing I hope this scenario
2 would give us a handle on.

3 MR. BOUCKHOUT: Right, wh we
4 will attempt to develop a scenario for you sir to give some
5 indication of how these things are planned for us. An
6 instance, the installation of block valves in the fault
7 zone, in the fault area which is for instance, one of the
8 protective measures --

9 DR. HUGHES: I just don't have
10 a feel for what this is going to look like when this
11 happens, you know, there may be some good examples from
12 pipelines elsewhere that have gone through comparable
13 situations. Maybe this would help to --

14 MR. BOUCKHOUT: Yes, we will
15 attempt to --

16 DR. HUGHES: -- to develop a
17 sort of a mental picture for us of what the problem is.

18 MR. BOUCKHOUT: Yes.

19 MR. CHAIRMAN: In terms of
20 scheduling, would you be prepared to present this in a short
21 period of time during this series of hearings or at the
22 first instance after July the 5th?

23 MR. BOUCKHOUT: Dr. Hill, I don't
24 think we can have much during this series of hearings as we
25 only have two days left. I expect we'll attempt to have it
26 to you as early as possible and before the second series of

Mr. L. Bouckhout
Mr. C. Wykes

1 hearings certainly, but ..

2 MR. CHAIRMAN: A written analysis,
3 is this what you're suggesting?

4 MR. BOUCKHOUT: Pardon me?

5 MR. CHAIRMAN: You're suggesting
6 a written analysis to be --

7 MR. BOUCKHOUT: That's what I
8 understand Dr. Hughes' query to be.

9 MR. CHAIRMAN: Okay, fine. It's
10 getting late in the day. Mr. Wykes has a question.

11 MR. WYKES: Mr. Bouckhout, I was
12 just looking at the two proposed relocations in the White-
13 horse area, the pipeline route. Other than having to also
14 relocate a construction camp in the compressor station, it
15 seems to me that there might be added length in the pipeline
16 in these other alternatives. Will that in fact, result in
17 changes to any other locations of either construction camps
18 or compressor stations along the route.

19 MR. BOUCKHOUT: Yes, Mr. Wykes,
20 it could very well do. The compressor stations are relatively
21 restricted in location due to hydraulics. There is some
22 mobility but not a great deal, therefore, if you change
23 line length anywhere on the system, that could as a possi-
24 bility, then effect the location of compressor stations
25 downstream on that system. So it could very well -- there
26 are within certain limits, ways of overcoming this kind of

1 thing. It depends on the kinds of topography you're dealing
2 with. The topography does to some degree, limit your
3 mobility in compressor station location. If you're on a
4 flat ground in other words, for many many miles, your
5 latitude of compressor station location is greater than if
6 you're in very high relief areas, so it could potentially
7 do so.

8 It would have to undergo a new
9 hydraulic run to determine if in fact, the relocation given
10 the local topography, would result in implications for down-
11 stream stations.

12 MR. WYKES: The map that I
13 believe you, or the new alignment sheets you were going to
14 bring in tomorrow, will that show the location -- the changes
15 of locations of any of these compressor stations or camps?

16 MR. BOUCKHOUT: It would be
17 impossible to do so. As I say, in definitive terms, what
18 one would have to do is run a hydraulic program. This is
19 a computer program which is quite an extensive one and takes
20 into account the entire system. In -- there are to a degree
21 other ways of dealing with it, but again, you are restricted
22 somewhat and it would be impossible by that time to give you
23 what the total implications would be of all other compressor
24 stations downstream.

25 We could in general terms, indicate
26 where a new compressor station might be sighted along that

1 line. This would be very ball park as well.

2 MR. WYKES: So in fact, the
3 alignment around Whitehorse -- are you showing the new
4 location for a compressor station on those new alignment
5 sheets?

6 MR. BOUCKHOUT: Well, what we
7 are providing you with and what we have been discussing, are
8 pretty much general locations where we, as a first analysis,
9 have considered that maybe the best alternatives -- again,
10 we've discussed this very briefly before, in that there are
11 many implications in the Whitehorse area for any alternative
12 or any route that must be taken into account.

13 If we, on the sheets we've shown
14 you, until a hydraulic run were done, one would not be able
15 to precisely pinpoint the optimal compressor station location.
16 But again, any compressor station location that is on the
17 alignment sheets currently, does have some mobility so that
18 we are looking at a range. For instance, even on the existing
19 alignment, there is some potential that the current location
20 indicated for a compressor station might be somewhat flexible.

21 The compressor station locations,
22 as the campsite locations and so on, are all still subject
23 to further environmental evaluation and as such, could very
24 well be moved for those reasons.

25 MR. TREVOR: We've indicated
26 previously, that we have concern for what's going on on the

Mr. B. Trevor
Mr. L. Bouckhout
Mr. B. Lister

1 other side of the border, but we don't know what the design
2 is, we don't know what the terms and conditions -- the
3 general terms and conditions might be.

4 Do I infer then from the remarks
5 you've just made, that if the Alaska authorities saw fit to
6 require a deviation in the routing on the Alaska side, that
7 we could end up with changing every compressor location in
8 the Yukon, that this would have a chain reaction all the
9 way down the line?

10 MR. BOUCKHOUT: It would depend,
11 Mr. Trevor, particularly on how divergent the change was,
12 but certainly if there were a very major change made which
13 would add for instance, ten miles to the route or twenty
14 miles to the route or detract or subtract ten or twenty
15 miles from the route and so on, certainly then, the potential
16 is there that the compressor station locations would be
17 changed.

18 MR. CHAIRMAN: Mr. Lister, last
19 one for the day.

20 MR. LISTER: Just on the same
21 subject of route relocations. I just wanted confirmation,
22 Mr. Bouckhout, as to what relocations were presently under
23 consideration by Foothills, in addition to the one around
24 Whitehorse.

25 MR. BOUCKHOUT: The route around
26 Whitehorse, Mr. Lister, and the other one which, as I said,

1 I don't know if it should be considered as under the status
2 of a definite relocation, but as I mentioned yesterday, we
3 are looking at the Sheep Mountain routing which is one we
4 feel obviously requires some more work and some more
5 definition.

6 We have in fact, undertaken to
7 discuss on sight, that particular location with officials
8 of the Parks Branch, the Wildlife Management Branch, Depart-
9 ment of Public Works and so on, to have a mutual discussion
10 on sight as to what the various implications from various
11 points of view might be for location in that area.

12 Those are the prime ones. We have
13 and I think it is explained in the Environmental Atlas which
14 was supplied to you, the relocations that have been adopted
15 already.

16 MR. LISTER: I'm aware of at
17 least six decisions by Foothills to relocate, including
18 Pickhandle Lake and Johnsons Crossing, Yukon River and so
19 on. I just wondered if you had any others under consider-
20 ation and I guess I've got the answer.

21 I also heard you say something
22 about the Squanga Lake area though and I just wondered if
23 you were considering some realignment in that area.

24

25

26

1
2 MR. BOUCKHOUT: We are not active-
3 ly considering a major realignment in that area, particularly
4 now when we feel that since there's no longer a compressor
5 station located there, nor permanent access road located there.
6 That the concern, with respect to Squanga Lake, given winter
7 construction, or given summer construction rather, is not
8 as serious as we had originally thought. Our biologists in
9 the conduct of their field studies currently, are again asses-
10 sing the area and the results of those studies will indicate
11 to us whether some refinement in relocation, as I mentioned
12 earlier, with respect to the alignment around the lake itself
might be warranted.

13 MR. LISTER: Thank you.

14 MR. CHAIRMAN: I'm sorry, that
15 wasn't the last one for today, that was the last one for
16 this afternoon. I'll adjourn the meeting and we'll reconvene
17 at 7 o'clock tonight.

18 Before I do that though, is there
19 anyone in the audience who would like to address the panel?

20 Oh, okay, then at 7 o'clock tonight
21 we'll reconvene.

22 (PROCEEDINGS ADJOURNED)

23 PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT

24 MR. CHAIRMAN: Thank you. I would
25 like to call the meeting to order, please.

26 Before we start, the possible

1 realignment of the proposed pipeline in the Whitehorse area,
2 I'd like to say a word about that for those people who weren't
3 here this afternoon. The Applicant is considering two other
4 alternative ways of passing by Whitehorse and Foothills has
5 supplied a map, which I've pinned to the wall there, which you
6 may have a look at at your leisure.

7 This evening, the first intervener
8 is the Yukon Conservation Society and Mr. Martyn Williams and
9 Mr. Russ Crum will be making the presentation.

10 MR. WILLIAMS: The Society has a
11 policy towards the Alcan Pipeline which has been available at
12 your Information Office and I have a copy here - it's not the
13 document you have in front of you, it is yet another document
14 which we have given to the National Energy Board and also to
15 the Lysyk Inquiry. And, if you haven't, or if you aren't all
16 familiar with it, I have a copy here that I could read into the
17 record or I could just get straight on to the environmental
18 problems, which you have in front of you.

19 MR. CHAIRMAN: Well, I think the
20 best way to proceed is to go ahead with the environmental pro-
21 blems. If you wish to read your policy into the record, that's
22 fine with us.

23 MR. WILLIAMS: I believe it is avail-
24 able through the Information Office anyway, so maybe I'll leave
25 it like that.

26 MR. CHAIRMAN: Okay.

1 The Yukon Conservation Society has
2 presented evidence before the National Energy Board and has
3 published several accounts of information relating to environ-
4 mental problems we feel will be precipitated by the Alcan Pipe-
5 line Project. We trust this panel has this information. We
6 will limit our comments here to a summary of our concerns and
7 an abbreviation of new areas of environmental concern on which
8 we will be presenting evidence in the future and hope that this
9 board will direct other interested parties to do likewise.

10 As a general comment, we have on
11 several occasions stated that, done properly, the Alcan propo-
12 sal has promise for few environmental impacts. Our concerns
13 are: OUR concern regarding the quality of the environmental
14 work done by Foothills is on record and we feel it remains an
15 issue. However, we prefer to leave this matter in the hands of
16 others more capable of training and experienced to detail be-
17 fore the Inquiry.

18 Two: We feel that there are poten-
19 tial problems embodied in the very nature of this Inquiry it-
20 self. These we will detail. Rush jobs never produce admirable
21 results at the best of times. We feel that the major problem
22 with the Alcan proposal^{is} that the terms of reference for this
23 Inquiry are too narrow in scope and time to do justice to
24 environmental problems associated with the project. However,
25 we have been lead to understand that terms of reference under
26 which this Inquiry is advancing, that in these terms there is

1 no clear commitment that the board's finished report will be-
2 come a public document. We feel there is a precedent before
3 us in the Mackenzie Valley Pipeline Inquiry which leaves this
4 Inquiry honour bound to follow suit. We will be reluctant, in
5 fact, to participate if this assurance is not forthcoming.

6 We consider that, because of the
7 lack of data and the short timeframe for this Inquiry, it would
8 be a step backwards for the development of higher standards and
9 impact studies and assessment if the decision about the largest
10 project in Canadian history were made on the basis of the in-
11 formation to date.

12 The Dempster Lateral will be given
13 star billing in our evidence on the environmental effects of
14 the Alcan proposal. The construction of that highway must be
15 included in the discussion relative to Alcan, not simply the
16 use of that highway. In this regard, we are aware of an ob-
17 vious conflict of interest in that this board is composed sole-
18 ly of federally appointed personnel, most of which are federal
19 civil servants. We question the ability of this panel to ob-
20 jectively consider the Dempster problem, given that the federal
21 government is (a) building the road; (b) issues all land use
22 and other permits for construction of the road.

23 The development of a management plan
24 for the Porcupine caribou herd is of obvious importance to this
25 Inquiry and to collect information on the progress on a manage-
26 ment plan for the Dempster Highway specifically, we suggest

1 that Dr.(.....) and Valeris Hume, of Northern Roads and
2 Airstrip Division, Department of Indian and Northern Affairs,
3 who is looking at this document, be asked to appear.

4 Divergence from the Alaska Highway
5 right-of-way remains as the most identifiable environmental
6 concern in the southern portion of the Alcan proposal. Major
7 divergence of the proposed pipeline from the highway, intru-
8 sion of man and machines during construction and permanent
9 access after construction into two remote, two areas remote
10 from the Alaska Highway, the Ibex Pass region with its perman-
11 ent Dall sheep population of 300 plus animals, and the Michie/
12 Squanga Lakes area, with its migratory mountain caribou popu-
13 lation of about 100 plus animals. Knowledge is limited on the
14 numbers of moves and movements of these big game herds. For
15 both areas, understanding is needed of annual movements and
16 annual productivity. Both these areas are relatively close to
17 the Yukon's greatest concentration of people. No productivity
18 data exists to allow the Yukon Wildlife Branch to set hunting
19 regulations which adequately protect these herds in the face
20 of increased access that the proposed pipeline would create.

21 If summer construction proceeds
22 as planned along Mount Michie, where caribou are known to
23 summer, caribou could be frightened off this isolated tundra
24 block into less favourable habitats. Significant tundra dam-
25 age, terrain damage, sorry, of summer construction could also
26 occur.

1 Minor deviations: In a great many
2 other places, the proposed pipeline is more than a mile from
3 the highway. Some of these concern us. Deviations between
4 Mile 90 and Mile 170, which takes the proposed pipeline west
5 of the highway into the Kluane Game Sanctuary and, in places,
6 I.B.P. reserves. The Sanctuary exists because of Territorial
7 Ordinance so is a special concern. It is significant not only
8 in its own right, but in its position adjacent to Kluane Na-
9 tional Park. Wildlife, such as caribou, sheep, wolves, trust
10 Park Sanctuary boundaries.

11 The Yukon Territory rank fully in
12 land preserved for wildlife. Even sanctuary status did not
13 legally protect the land from habitat destruction. We do not
14 support any activities to further distract from wildlife
15 preservation in our few sanctuaries.

16 More specifically, between Mile 90
17 and 110, some of the 50 to 200 mountain caribou, which summer
18 on the Burwash Uplands in the Sanctuary, occasionally
19 move down in winter adjacent to from across the highway.
20 Caribou were killed last winter in the lower Duke River, near
21 it's confluence - and here we go to Page 5, I'm sorry for the
22 introduction - with the Kluane River and, in earlier years,
23 east of the highway between Burwash and Quill Creeks. Again,
24 insufficient information on productivity, based on a M.S.C.
25 thesis, who researched study and Parks Canada and Game Branch
26 surveys, indicates a very low annual recruitment.

1 The herd cannot withstand addi-
2 tional hunting. In this stretch especially, proposed pipe-
3 line, the proposed pipeline should not intrude into the
4 Sanctuary. Construction should be rescheduled to summer
5 instead of winter. Hunting must not be allowed.

6 We are concerned over Sheep Moun-
7 tain. The Applicant faces special problems here in terms
8 of necessity for the addition, for the additional visable
9 scar will be left by necessity cut and fill on slopes that
10 approach 45 degrees and, in terms of re-vegetation, in an
11 arid environment.

12 On the open slopes, it seems
13 far-fetched that man and machine will confine their damage
14 to a 60 foot right-of-way.

15 This mountain has been identified
16 as of national significance by Parks Canada. We cannot
17 condone a visual scar on it that may last indefinitely. We
18 categorically oppose construction of pipeline on the Moun-
19 tain and suggest the pipeline go under the highway here.
20 Such can be done. It just takes thicker pipe, deeper burial
21 and more valves.

22 I'm sorry, we're skipping a little
23 bit, we go back to Page 4 to Synergistic and Spin-off Effects
24 of the Proposed Pipeline.

25 We are concerned that our foregoing
26 areas of concern will in some day be viewed as having only

1 been aimed at the tip of the iceberg. The proposed paving
2 of the Alaska Highway compels problems of environmental dis-
3 turbance and over-hunting. The main places have five parel-
4 lel strips: the CN Telecommunications' line, old highway,
5 new highway, old Haines/Fairbanks Pipeline, Foothills Pipe-
6 line.

7 In written testimony for Artic
8 Gas Pipeline at the National Energy Board Hearings on the
9 Mackenzie Pipeline, Dr. A.W. Banfield, referring to the
10 Foothills Alcan proposal, expressed concern over a measured
11 potential for severe synergistic cumulative impacts on
12 utility corridors. We agree that no data exists to allow
13 any assessments of problems like barrier effect of a series
14 of corridors or necessary distance foraging for gravel
15 because of such local demands.

16 We also have not assessed the
17 impact of a possible additional power corridor which may
18 eventually be built. Compressor stations are designed to
19 be able to be switch... from gas power to hydro power. The
20 impacts of an unknown dam are not considered. The impacts
21 of a possible Dempster Lateral, which may be spawned by the
22 Foothills line, has not adequately been assesed and the lo-
23 cation of telecommunications towers and burrow pits are not
24 given in the application's proposal.

25 In short, any present attempts
26 at assessing impact of the Foothills proposal may be totally

1 inadequate if other developments result from the proposal
2 and it be viewed as part of a synergistic set of actions.
3 These unknowns leave us most uneasy about the Foothills
4 proposal.

5 Our conclusion - oh, I'm sorry,
6 I'll just remove that last little bit for you...

7 I'm sorry for the disorderly
8 nature of the application.

9 MR. CHAIRMAN: The procedure, if
10 you haven't been following the hearings, is that we now
11 have questions from the panel, the panel staff, and then
12 we have a, give Foothills the floor to respond and then we
13 have questions and comments from the audience. And the
14 panel, of course, intervenes at any time to ask points of
15 clarification.

16 So, does the panel have any com-
17 ments?

18 Before we start, you had a point
19 about the, our conclusions, recommendations being made
20 public. The policy is that the Minister to whom we give
21 our report, the Minister of Fisheries and Environment, makes
22 the report public. It's at his discretion and the, anyone
23 wishing that the Minister make it public, I would suggest
24 that you ask him if, what his intentions are.

25 As far as the panel largely made
26 up of civil servants being biased in this case, I personally,

1 and I don't know of anybody else on the panel who was in-
2 volved in the decision with regard to building the Dempster
3 Highway in the first place, I certainly had nothing to do
4 with it and wasn't involved in any of the analysis and I
5 don't believe any of the other panel members were.

6 So, any comments or questions
7 from the other panel members?

8 MR. L. CHAMBERS: You mentioned
9 the, in the first paragraph of your brief, new areas of
10 environmental concern and in your brief I'm not sure just
11 what those new areas of environmental concern, which you
12 bring to our attention, are.

13 MR. WILLIAMS: Well, I don't
14 think they're new from our old brief. They're not new in
15 terms of being introduced to the panel, I don't think. I
16 think the panel has, perhaps, heard quite a few of them
17 introduced by other interveners and interested parties.

18 Does that answer your question?

19 MR. CHAMBERS: Would you like to
20 highlight them again for us so we are sure that we have
21 heard them from other interveners?

22 MR. WILLIAMS: Okay. The problems
23 arising from a Dempster Lateral would be one. The major
24 deviations of the pipeline from the Highway and the areas
25 in which they are. We specifically have outlined two, you
26 know, the Ibex River area and the Mount Michie/Squanga area.

1 Then the minor deviations, which are through, in some
2 cases, through I.B.P. reserves, Kluane Park and the effects
3 of the caribou of the Burwash Uplands, and then the syner-
4 gistic and spin-off effects and there mentioning the other
5 projects that might go hand in hand with a certificate of
6 convenience being granted to Foothills, you know, and
7 those are the - there's a very strong possibility of a
8 hydro development in the Yukon with compressor stations
9 being turned over from gas to electricity. The Dempster
10 Lateral, obviously, again, it's even being mentioned,
11 things like utilization of gas for removal of the iron
12 ore deposits in the Snake River, it's been mentioned by
13 prominent politicians, all tied into a picture of develop-
14 ment that the Yukon might be locked into, having got this,
15 you know, having got this one project underway.

16 So, we'd, you know, we'd like
17 you to very carefully consider those sort of things.

18 And then, actually there's two
19 more that aren't mentioned here. One was the whole ques-
20 tion of land claims on the environment and how, if a pipe-
21 line is - a certificate of convenience is given before
22 land claims are settled, the environmental effects of that
23 and if there are any, we feel that there perhaps are some.

24 And then the other one, which I
25 believe has also been mentioned before is earthquakes.
26 And, you know, areas of earthquake activities, seismic

1 activity if the pipeline crosses.

2 MR. CHAMBERS: Thank you. I have
3 one further question, on Page 3 of your submission there
4 is some confusion in my mind right now about some of the
5 previous evidence referred to over the last three days. In
6 paragraph three you state that summer construction proceed
7 as planned across Mount Michie where caribou are known to
8 summer. There has been evidence presented to us that the
9 concern is a wintering area in there for caribou and now,
10 which is it, or is it both?

11 MR. WILLIAMS: It's apparently
12 both, from our information, from asking basically the Game
13 Branch and that was the reply that we got from them, that
14 it was, it was both a summer and winter area for caribou.

15 MR. CHAMBERS: Is the environmen-
16 tal impact seen from your group then, the problem with
17 the caribou being in there in the summer or the problem
18 with the caribou being disturbed in the winter, as being
19 critical, are you saying, are they both critical?

20 MR. WILLIAMS: Well, obviously,
21 if
22 caribou are there in the summer and winter, then it's going
23 to be very difficult to find a season of the year, if they
24 are there in summer and winter, it's going to be very dif-
25 ficult to find a season of the year in which they won't be
26 disturbed. So therefore, perhaps, a re-routing should be
looked at in that case or, well, you know, I'm sure you're

Mr. Williams, Mr. Chambers 417
Mr. Wykes

1 going to receive other suggestions on what could happen,
2 but I think we're trying to point out the area of concern.

3 MR. CHAMBERS: Thank you.

4 MR. CHAIRMAN: Mr Wykes.

5 MR. WYKES: Mr. Williams, on
6 Page 2, you mention that, "divergence from the Alaska Highway
7 right-of-way remains as the most identifiable environmental
8 concern in the southern portion of the Alcan proposal" and
9 on Page 3, centre of the page, you're talking about minor
10 divergence and you're suggesting that those are more than
11 a mile from the highway. Do you have any feeling for what
12 might be an ideal distance the pipeline should be away from
13 the Highway?

14 MR. WILLIAMS: Well, we've been
15 through this question amongst ourselves and the consensus
16 as close to the Highway as
17 seems to be as/possible, from an environmental point of
18 view, but often you tend to run into social problems when
19 you start coming very close to the highway, too, so, ideal-
20 ly as close as possible. And so that is, you know, in
21 the right-of-way, if that was possible, but we can see
22 problems with that and we're not sure in our own minds
23 exactly, you know, exactly what should be done and we
24 think we have to look at a specific example, but, you know,
25 ideally, as close as possible.

26 MR. WYKES: And, not more than
a mile, where avoidable?

1 MR. WILLIAMS: Yes, taking into
2 all, taking into account all factors, ideally, not more
3 than a mile.

4 MR. WYKES: Thank you.

5 MR. CHAIRMAN: Mr. Trevor.

6 MR. TREVOR: Mr. Williams, your-
7 selves and other people that have appeared before the pan-
8 el have expressed a great deal of concern about the pres-
9 sure that might be exerted upon the wildlife, particularly
10 the caribou and the Dall sheep as a result of possible
11 construction of the pipeline. Do you see this pressure
12 coming from, as you say, better access to these areas or
13 from the fact that there are construction workers present
14 in the Territory who would wish to exercise their rights,
15 so to speak? Or is it both?

16 MR. WILLIAMS: I think it's,
17 well, it's the actual construction. Secondly, it's possi-
18 ble pressure from construction workers and then thirdly,
19 it's pressure from increased access to, that sort of
20 thing. You know, each one of them has, has a possible
21 cumulative effect on the animals in the area.

22 MR. TREVOR: Well, given the
23 number of trails that exist at present, and they're some-
24 times rather open terrain we have here, do you think that
25 one right-of-way really increases the access that much?
26 That it couldn't be off-set, for example, by a change in

1 allowable take, the number of licenses issued?

2 MR. WILLIAMS: I think it per-
3 haps could be controlled by licensing and things like
4 that, but that is actually not a management problem in
5 some ways. That's quite a political problem and so if we
6 can avoid the political problem of getting into the ball
7 game of having to look at issuing of licenses because of
8 a problem we've caused earlier on, perhaps we should look
9 at the earlier problem and try and solve that and then you
10 won't have to go to the other solutions.

11 MR. TREVOR: Well, would the,
12 would the present allowable take be correct or reasonably
13 so at this time?

14 MR. WILLIAMS: Well, currently,
15 of my own understanding is that there isn't really any
16 allowable take. What happens is that an area is open for
17 a season and if a road is suddenly in there then twice or
18 three times as many hunters might go into that area and
19 might take ^{more} animals than previously. And so, currently
20 the thing, hunting isn't controlled by allowable take, it's
21 controlled by season only and access therefore would
22 very much influence that.

23 MR. TREVOR: And then, as a
24 further point, do you consider that reducing, controlling
25 the take might lead to a greater extent of poaching?

26 MR. WILLIAMS: I would suspect

1 that would probably be...

2 MR. TREVOR: Now, what I was
3 trying to get at here was that if the pipeline were to pro-
4 ceed and there were regulations saying that the workers
5 that came from the outside could not avail themselves of
6 hunting in the Yukon, would this tend to increase the
7 poaching?

8 MR. WILLIAMS: I'd say certainly,
9 yes.

10 MR. TREVOR: Thank you.

11 MR. CHAIRMAN: You mentioned the
12 scar on Sheep Mountain as an unacceptable situation. This
13 is largely because of the aesthetics, as I understand your
14 argument.

15 MR. WILLIAMS: Well, the aesthetics
16 is one consideration, but I think also, you know, that the
17 fact that the scar is there, therefore we don't have any
18 vegetation and it is an area of critical sheep winter range,
19 too. So, you've got, you've removed a certain percentage
20 of the vegetation for those sheep, therefore, the area can
21 support, in theory, less sheep, too. I might be incorrect
22 in that, but I understand that's the theory.

23 MR. CHAIRMAN: On the aesthetics
24 question, what sort of criteria would you place on scars on
25 Sheep Mountain? What is the, what criteria would an archi-
26 tect work to? Have you any idea?

1 MR. WILLIAMS: Not really, no,
2 because that isn't my area of expertise, but, just as a lay
3 person who knows the Yukon and who's seen Sheep Mountain
4 before, there was scar in it then, I think I would feel
5 quite upset having seen it, you know, seeing a scar on it,
6 because, you know, for a reason that perhaps, you know,
7 isn't too valid. When mitigative measures can be taken.

8 MR. CHAIRMAN: So that the visual
9 impact of the scars?

10 MR. WILLIAMS: Yes.

11 MR. CHAIRMAN: Any other questions
12 from the panel?

13 Panel staff, do you have any
14 questions? Mr. Schilder.

15 MR. SCHILDER: Mr. Chairman, I
16 have a question for Mr. Williams. I didn't get a copy of
17 your briefing, unfortunately, and somehow I am afraid that
18 I didn't understand your implications about hydro power
19 potential development. Could you explain what did you have
20 in mind and, perhaps, could you be more specific what poten-
21 tial sites you have in mind and elaborate on that, please.

22 MR. WILLIAMS: Well, NCPC has
23 conducted discussions with Foothills about electrocution
24 of the proposed pipeline and NCPC is currently looking at
25 a dam in the Yukon that could supply power to the pipeline
26 and they're looking at five sites currently. Four of them are

1 known from the Sigma Resource Consultants report and those
2 are one on the Pelly, at Granite Canyon, one on the Yukon
3 at Five Finger Rapids, one on the Stewart and one on the
4 Francis. And then NCPC also says they have a fifth site,
5 which is environmentally far more suitable than the rest,
6 but they're, unfortunately, not releasing where it is. We
7 have asked them a number of times for the location of that
8 site, but they say that it's secret and it's called "Plant
9 X" by NCPC.

10 MR. SCHILDER: And, do you feel
11 that that type of development could take place directly in
12 connection with the proposed pipeline and do you fear na-
13 turally certain potential impact.

14 MR. WILLIAMS: NCPC said at a
15 Board meeting recently that they had great hopes that they
16 could supply power to Foothills and that it would be at an
17 economic rate and that they're looking at 300 megawatts for
18 that for the Foothills proposal.

19 MR. SCHILDER: How many?

20 MR. WILLIAMS: Three hundred
21 megawatts being utilized as part of a scheme to produce a
22 dam that would produce 1,000 megawatts, which I think is
23 20 times currently greater than the power demand in the
24 Yukon. And so they're looking at that supporting, they're
25 looking at the Foothills proposal assisting, along with a
26 smelter in the Yukon, making 600 megawatts of power.

1 And they're also looking at the
2 Foothills' proposal because you have lines running north/
3 south through the Yukon along the proposed pipeline, con-
4 necting in with a grid that would then send the excess power
5 outside to southern Canada and Alaska.

6 So, not only are we looking at a
7 dam, but also tying into a national grid system to sell or,
8 yeah, to export power from the Yukon by virtue of the fact
9 that it's on, you know, the pipeline runs that way, runs
10 along the Alaska Highway.

11 DR. SCHILDER: Mr. Chairman, I'm
12 not sure whether the following political question would be
13 relevant but if you feel not, you could rule it out, but
14 perhaps we could ask the representative of the Foothills
15 whether the present proposal has been also considering using
16 NCPC power for any of their compressor stations?

17 MR. BOUCKHOUT: Dr. Schilder, Mr.
18 Elwood is more familiar with the implications of that and
19 I'd like to have him answer that particular question.

20 MR. ELWOOD: We have discussed
21 the possibility of using electric power to drive the com-
22 pressors for this line. We've discussed this with NCPC.
23 I'm trying to recall the testimony of the President of the
24 company, Mr. Blair, before the National Energy Board recent-
25 ly., when he dealt with this subject and I believe he out-
26 lined the position of the company there as being if the

1 construction of such a hydro facility and the lines tying
2 into a grid system were in the best interests of Yukon to
3 proceed with that; that we would certainly undertake to
4 purchase that power, providing it was reasonable business
5 deal for Foothills. We have looked at the, what would be
6 involved in designing into our compressor stations, at this
7 stage, the necessary foundations and other equipment to
8 change out at a later date. Our preliminary conclusion is
9 that that is a feasible thing to do, to design them now for
10 a later change-out, if there were prospects that that could
11 be done.

12 MR. CHAIRMAN: Dr. Beanlands.

13 DR. BEANLANDS: Mr. Williams, is
14 the Yukon Conservation Society opposed in principle to the
15 construction of the Alcan pipeline?

16 MR. WILLIAMS: We're opposed in
17 principle, we're opposed to the proposal as it stands, as
18 it currently stands. We're, we say the concept of a pipe-
19 line following the Alaska Highway is, the concept of it
20 is perhaps quite good, but we can't support the proposal
21 as it stands because of - maybe I could just actually read
22 it out of the written announcement, if you don't mind.

23 "In the first place, the socio-
24 economic and environment research of Foothills has a lack
25 of substance and abounds in mistakes and inaccuracies, often
26 leading to wrong or misleading conclusions.

1 The Yukon Conservation Society
2 feels that the research done is totally inadequate for an
3 evaluation of the project to the Yukon.

4 Secondly, the route is unaccept-
5 able from an environmental standpoint because some of it
6 passes through wilderness areas, a fact that is inexcusable
7 when a transportation corridor is located in the same region.

8 And those are the environmental
9 reasons we've - we've got a social-economic reasons.

10 DR. BEANLANDS: In principle then,
11 if the Applicant was able to pose acceptable solutions to
12 the problems that you raise and fill in the data gaps as
13 exist now, you would not be, in principle, opposed to the
14 construction of the line?

15 MR. WILLIAMS: No.

16 MR. CHAIRMAN: Mr. Lister

17 MR. WILLIAMS: I'm sorry, could
18 I just - our other opposition was in regard to the need
19 for the energy in the U.S. and the - we question that.
20 So, also that point would have to be clarified to our sat-
21 isfaction also.

22 MR. LISTER: Mr. Williams, you
23 mentioned the, at one point in your brief, the synergistic
24 effects of multiple development. You go on to consider
25 the spin-off effects of one large development and urge the
26 panel to take into consideration this possibility. I'm

Mr. B. Lister
Mr. M. Williams
Ms. Archibald

426.

1 not entirely clear what you are talking about when you
2 talked about synergistic effects. Are you talking about
3 multiple linear developments or are you talking about a
4 linear development, followed by other possible things,
5 such as hydro-electric development?

6 MR. WILLIAMS: I think we're
7 talking about a pipeline being built along an already
8 established road and the spin-off effects -- the extra
9 effects that might have, so I think the example would be a
10 herd that has already had part of its range depleted and
11 is perhaps therefore, highly susceptible to an additional
12 impact.

13 So, the effect you know, is greatly
14 multiplied by building a pipeline and obviously, from our
15 reading it seems to be a very new area but we'd certainly
16 like the Board to look at it and investigate it.

17 MR. LISTER: Thank you.

18 MR. CHAIRMAN: Ms. Archibald
19 first.

20 MS. ARCHIBALD: Mr. Williams, in
21 highlighting your concerns, you mentioned a relationship
22 between land claims and the environmental impact of the
23 pipeline construction.

24 Could you please explain what that
25 relationship would be?

26 MR. WILLIAMS: Well, our concern

Mr. M. Williams
Mr. V. Schilder

427.

1 is that -- one of our concerns, an environmental concern is
2 that a pipeline -- if a pipeline is built before land claims
3 are settled, we are in the position in the Yukon where we
4 have a land freeze and developments that are environmentally
5 related are currently being held up, such as IBP sites,
6 territorial parks and those -- the development of many -- of
7 a lot of land use planning in the Yukon is also held up.

8 Therefore, why should one project
9 go ahead when all the other projects, whatever they are,
10 environmental, whatever, are being held up so the Yukon in
11 fact, would from an environmental viewpoint, might come out
12 a loser if that happens prior to land claims being settled.

13 We'd like^{you} to investigate that area
14 too.

15 MS. ARCHIBALD: I see, thank you.

16 MR. CHAIRMAN: Could I interrupt
17 for a minute? Are there no chairs back there? Maybe you
18 can take one from the pile.

19 MR. SCHILDER: Mr. Chairman, I
20 have one question for Mr. Williams.

21 I might have been a poor listener
22 but I don't recall within your brief, to hear of any general
23 or site-specific concerns for potential water uses which
24 may be or are planned in association with the proposed
25 pipeline project.

26 MR. WILLIAMS: Any concerns about

Mr. V. Schilder
Mr. M. Williams
Dr. Beanlands

428.

1 proposed water uses?

2 MR. SCHILDER: Yes. Do you
3 have any concerns in connection with any proposed water
4 uses by the pipeline project?

5 MR. WILLIAMS: They haven't
6 really, you know, there are so many concerns in many ways
7 that you know, are very detailed that we have with the
8 project that other people have brought up, but I'm sure we
9 have some because we've read Foothills' report very exten-
10 sively. We have comments throughout the report and so if
11 I was able to refer to that, I am sure I would be able to
12 find some water-related uses that we might have, but I
13 don't have them in front of me.

14 MR. SCHILDER: Thank you.

15 MR. CHAIRMAN: Dr. Beanlands?

16 MR. WILLIAMS: In connection with
17 that, some of our comments might be incorporated into our
18 presentation to the National Energy Board too.

19 DR. BEANLANDS: Mr. Williams,
20 based on the information that we have now, in your opinion
21 if a pipeline had to be built, is there any better location
22 than along the Alaska Highway?

23 MR. WILLIAMS: Unfortunately, there
24 are potential of the locations apart from the Alaska Highway,
25 but they're obviously only potential because of the data
26 base available on them. So, we wouldn't really like to

Mr. M. Williams
Dr. Beanland

429

1 comment on either the Tintina Trench -- you know, there are
2 many lines you can draw on a map, but they're really only
3 potential until you've got some sort of base on which to
4 evaluate them.

5 DR. BEANLANDS: I'm trying to
6 build on your concern for the development of a corridor.
7 Again in principle, wouldn't it be better to stay near the
8 Alaska Highway than to open up another part of the Yukon
9 which is presently relatively inaccessible?

10 MR. WILLIAMS: What we've -- what
11 our thoughts are on this is that the pipeline as proposed
12 down the Alaska Highway is in fact, environmentally superior
13 to Arctic Gas' proposal to build a pipeline across the
14 northern Yukon as it stands. We still are opposed to it
15 because we feel that you know, we still are opposed to the
16 Alaska Highway pipeline because of the concerns I've already
17 mentioned.

18 MR. CHAIRMAN: I have a couple
19 of questions here on the Dempster Lateral. You say you're
20 going to give it star billing. This as I understand it, is
21 to our hearings in July. Is this what your reference is?

22 MR. WILLIAMS: Yes, we're hoping
23 to present evidence to you in July.

24 MR. CHAIRMAN: Well, in scheduling
25 our July hearings, we are taking into consideration, infor-
26 mation given now to determine which issues are important and

1 how important so we can schedule time in July.

2 Could you briefly describe your
3 concern about the possible Dempster Lateral? I understand
4 from the first meeting that your position is that the
5 Dempster Lateral should be considered when the Alaska High-
6 way pipeline is considered because it's an inevitable event
7 that such a pipeline would be proposed. I'm not saying that
8 but I understand this is your position. So that we have to
9 determine how much time we're going to spend on the Dempster
10 Lateral in July, would you please give us more background
11 than you have here on what you consider the major impacts
12 would be to a Dempster Lateral.

13 MR. WILLIAMS: Well, there are
14 three wildlife related impacts that we can see -- sorry,
15 three major wildlife related impacts.

16 One would be the Porcupine caribou
17 herd. Secondly, would be the sheep populations in the
18 Mackenzie Mountains -- I'm sorry in the Richardson Mountains
19 and third would be raptor populations in those areas too.

20 So those are what we see as the
21 three major concerns right now from our point of view.

22 MR. CHAIRMAN: Sorry, what was
23 the third one?

24 MR. WILLIAMS: Sheep -- sorry, --

25 MR. CHAIRMAN: The caribou herd,
26 the sheep population, --

MR. CHAMBERS: Just getting
back to the question on the Dempster Lateral. I'm not sure

Mr. L. Chambers
Mr. M. Williams
Mr. L. Bouckhout

1 in your suggestion here, is Dr. Hume in charge of a manage-
2 ment plan for the Porcupine caribou herd? Is Dr. Hume in
3 charge of a management plan for the Dempster Highway? It's
4 not very specific in your statement there.

5 MR. WILLIAMS: We believe Dr.
6 Hume is supposed to be in charge of a management plan for
7 the highway.

8 MR. CHAIRMAN: Mr. Bouckhout,
9 would you like to make a statement?

10 MR. BOUCKHOUT: I just have a
11 few comments, Dr. Hill. I don't have a copy of the brief
12 so I'll try and recall as much as possible.

13 MR. CHAIRMAN: Oh, I'm sorry.
14 Do you have an extra copy?

15 MR. BOUCKHOUT: The concerns
16 expressed by Mr. Williams have been recognized by Foothills.
17 We have discussed these concerns before. We have undertaken
18 study on the various concerns in the various areas he's
19 mentioned. These studies are continuing of course, and will
20 continue for some time.

21 Just a few general comments on
22 some of the issues raised or some of the subjects raised,
23 one being the Dempster Highway. Certainly, the Dempster
24 Highway is a consideration. I don't think the impression
25 should be left that if an Alaska Highway pipeline were built,
26 the Dempster Highway connection is a certainty necessarily.

Mr. L. Bouckhout

1 It's a consideration but it's definitely not a certainty.

2 With some of the site-specific
3 areas, Mr. Williams mentioned, we have discussed a number
4 of these before. They have been discussed before this
5 Inquiry. They've been discussed before the National Energy
6 Board and some of them have in fact, been discussed before
7 the Lysyk Commission as well. One being the Ibex Valley for
8 instance which is a portion of the routing in the Whitehorse
9 area.

10 We've discussed this this morning
11 and this afternoon -- or this afternoon rather. Our current
12 alignment does parallel the Ibex River. We are looking at
13 alternatives, potential alternatives to circumvent the Ibex
14 Pass or the Ibex River area. We have not adopted any of
15 the alternatives. We're simply looking at them as
16 alternatives.

17 We are not convinced yet that there
18 is an alternative which is necessarily better than the
19 existing one, although we are aware of the concern in the
20 area and this gives rise to our consideration of alternatives
21 in that particular area.

22 With regard to a comment of summer
23 construction rescheduling, in other words, rescheduling of
24 construction in a certain segment from the currently proposed
25 winter construction season to the summer construction
26 season -- I'm sure Mr. Williams appreciates that in defining

1 a construction season, one looks at a number of matters and
2 one of these matters in particular, is the stability of the
3 area, the implications of winter construction in the area
4 as opposed to summer construction in terms of terrain
5 disturbance and so on.

6 These are some of the considerations
7 that must be given to construction scheduling in any particu-
8 lar area, that the potential consequences of summer con-
9 struction as opposed to winter construction, not only on
10 the biological environment, but also on the physical environ-
11 ment, both of which are of course, very interrelated.

12 With respect to the Squanga Lake
13 area which is another diversion mentioned by Mr. Williams,
14 I believe I noted in what he said that there would be a
15 permanent access in the Squanga Lake area. I'm not sure if
16 that's correct or not, but at one time in an earlier version
17 of our program, there was a compressor station located along
18 that diversion with a permanent access road to that compressor
19 station. That of course, is no longer the case.

20 There would be no permanent access
21 roads provided in the Squanga Lake area. With respect to
22 Sheep Mountain, again we have also discussed this. It's
23 been discussed at quite great length before your Panel, both
24 today and yesterday. Again, this is an area which is
25 regarded by Foothills as an area of significant concern.

26 I indicated this afternoon, that

Mr. L. Bouckhout
Mr. C. Wykes
Mr. J. Elwood

1 this was a subject which was being discussed and pursued
2 amongst various interested parties including the Wildlife
3 Branch, including the Parks Department and so on. The
4 concern relates to sheep and the sheep population on Sheep
5 Mountain. It also relates to aesthetics.

6 We're aware of all those potential
7 implications and these are certainly being taken into
8 account in our continuing discussions in attempts to resolve
9 this kind of thing. Those are just a few of the points
10 that I noted down as Mr. Williams was reading the brief.
11 I can't think of anything more to add at this time.

12 MR. CHAIRMAN: Okay, questions,
13 comments from the floor?

14 Mr. Wykes has a question.

15 MR. WYKES: Mr. Bouckhout, it
16 was suggested in the brief presented by the Conservation
17 Society that you might consider locating the pipeline under
18 the road in the vicinity of Sheep Mountain.

19 Could you explain to us, problems
20 from a construction point of view, a safety pipeline integrity,
21 perhaps width of right-of-way for traffic flow along the
22 highway. Those types of problems that might be encountered
23 by locating the pipe under the road.

24 MR. BOUCKHOUT: I'd like to have
25 Mr. Elwood respond to that if I may, Mr. Wykes.

26 MR. ELWOOD: Certainly, Mr. Wykes,

1 to construct a pipeline underneath the highway would mean
2 that the highway was not available for normal traffic. It
3 would have to be completely dug up in order to put a pipe-
4 line through there. There would have to be a block for the
5 duration of construction.

6 Such a situation would be --
7 speaking here as an engineer -- concerning the safety of
8 the line and with the public nearby, I would have to say
9 that construction of a pipeline underneath a highway would
10 be an unsound proposition from a safety standpoint. The
11 most likely place to have heavy equipment working and
12 digging in the ground is in fact, along the highway and you
13 greatly increase the probability that they will dig the pipe
14 and cause a rupture.

15 So it would be, in my opinion, a
16 fundamentally unsound proposition to do so. I would agree
17 that it could be done if -- a pipeline could be laid nearly
18 anywheres really. It's a question of whether or not it is
19 a sound proposition.

20 MR. WYKES: I understand then
21 that it would not be completely impossible to locate a pipe-
22 line at depth perhaps under the road to increase the safety
23 factor. Would the entire right-of-way of the road have to
24 be used up to locate it under the road?

25 MR. ELWOOD: Well, in order to
26 lay the pipeline in any area, you have to of course, trench,

1 though you need space for the spoil material which comes
2 out of the trench which must be dug out, piled somewhere
3 for use as backfill later on.

4 You need the space for the trench
5 itself. You need space for -- to string the pipe along
6 beside the trench where the welders can work on it and then
7 you need an equipment lane for the equipment to handle it.
8 If you're talking of any distance at all, you need a driving
9 lane so that the men and other trucks servicing that con-
10 struction project can drive without being in the equipment
11 lane right where the tractors are working.

12 Generally, this takes us about
13 ninety feet which is quite beyond the extent of the road
14 surface. We would be using the road surface and both
15 ditches in that instance.

16 MR. THEBERGE: John Theberge,
17 Yukon Game Branch. I'd like to comment further from Mr.
18 Elwood's comment though, that there is a highway paving in
19 the offing perhaps, that may mean widening along that area
20 perhaps, and that might make enough room for the pipeline to
21 go under.

22 I would also like to ask Mr.
23 Elwood if there is a maximum depth to which it's possible
24 with the machinery you use, to put the pipe and thereby
25 alleviate the problems of possible damage later.

26 MR. ELWOOD: The depth that you can

Mr. J. Elwood
Mr. J. Theberge

439.

1 bury it to is limited by the length of reach on your backhoe
2 of course, which I'm not completely familiar with latest
3 construction machinery, but I would think anything beyond
4 fourteen feet is getting pretty close to being unreachable
5 by a backhoe so that that would be as deep as one could dig
6 with that kind of equipment.

7 The widening and paving of the
8 highway -- I think to put this in perspective, that really
9 is in our opinion, a fundamentally unsound proposition to
10 lay a pipe under a road lengthwise. There is some precedent
11 and some consideration being given to put it in the ditch
12 beside the highway, either buried or encased in concrete.
13 That is a more feasible proposition from a construction
14 point of view.

15 MR. CHAIRMAN: If you'd use the
16 blackboard and explain what you mean by laying it in a ditch
17 -- concrete ditch beside the road?

18 MR. ELWOOD: To encase it in
19 concrete for -- or some other protective coating to prevent
20 damage to the pipe and lay it in the ditch or in a trench
21 in the ditch. That would be more feasible than laying it
22 directly under the centre of the road bed. Such a proposition
23 seems to me to be -- as an engineer, I would never consider
24 such a thing.

25 MR. THEBERGE: Dr. Hill, I'm not
26 an engineer, but I would think that in the ditch, fourteen

Mr. J. Theberge

Mr. J. Elwood

Mr. M. Williams

1 feet down, encased in cement, would alleviate all possible
2 damage by a road snow removal and various other things like
3 that.

4 MR. ELWOOD: As I say, that the
5 ditch proposition is more feasible than laying it in the
6 road bed itself underneath the traffic lane. That seems to
7 me to be not at all a desirable way to go.

8 MR. THEBERGE: Could I ask Mr.
9 Williams if he thinks the Conservation Society would agree
10 with the proposition of putting it in the ditch, rather
11 than under the road? If in fact, it's the intent of the
12 Conservation Society to keep it off the shoulder of Sheep
13 Mountain and the ditch would be satisfactory.

14 MR. WILLIAMS: We're talking now
15 about if a pipeline -- if permission is given to build a
16 pipeline, then I think underneath the road would be, from
17 our point of view, far better than up on the side of Sheep
18 Mountain. But one perhaps further complicating factor would
19 be perhaps that -- and I don't know if I'm correct or not --
20 but that Sheep Mountain is on the edge of the Shawkak Valley
21 and that area is also prone to earthquakes and that's one
22 place where the pipeline, instead of running along the fault
23 of the Shawkak is actually turning and crossing the Shawkak.
24 So it might also warrant consideration from that point of
25 view.

26 MR. ELWOOD: I'd just like to

1 make a point there. The principle reasons why you don't
2 like to build a pipeline in an area like this, it's the same
3 as we've been discussing lately, the proposed Ibox alternate
4 that would more or less parallel the city boundary just out
5 here, is that to build a pipeline in an area like that, you
6 preclude certain future developments.

7 You would preclude for instance,
8 any further work on that highway in the way of blasting that
9 may or may not be necessary in the future. As long as the
10 pipeline is in service, you must have -- you either preclude
11 use of blasting there in that instance which of course, is
12 the only way you could build a road there, or you must take
13 some other special measures to try and overcome the fact
14 that the pipeline is there. If further work were needed on
15 the highway or if the city were to expand its development
16 within its boundaries here, there are certain limitations on
17 what they can do if that pipeline is put in that area. So
18 you preclude future options.

19 MR. CHAIRMAN: In considering
20 your options before you laid the current proposal out around
21 Sheep Mountain, one of the options you mentioned was using
22 the old right-of-way, was blasting on the road a consideration
23 in excluding that alternative? The current right-of-way is
24 fairly close to the existing road.

25 MR. ELWOOD: It's fairly close.
26 My judgment would be that it's far enough away that with

1 proper blasting techniques, you're not going to run into
2 difficulty along that route.

3 MR. THEBERGE: You asked the
4 question I was going to ask.

5 MR. CHAIRMAN: Thank you. Yes
6 please. Would you please identify yourself?

7 MS. SCHELLENBERGER: I'm Karen
8 Schellenberger. I was just wondering if you have -- you
9 said you needed something like ninety feet for three different
10 access roads for the pipeline construction, because I under-
11 stand the highway will have to remain open for people going
12 up to Alaska and back right? You'll need ninety feet for
13 roads for construction for the pipeline right? I could be
14 wrong, but this is what I gathered.

15 MR. ELWOOD: Yes, roughly ninety
16 feet.

17 MS. SCHELLENBERGER: Roughly
18 ninety feet okay and the pipeline probably would take up
19 about -- that would be four feet pipeline -- so it would take
20 up maybe six feet, give or take.

21 Do you have the space beside the
22 highway through there?

23 MR. ELWOOD: Pardon. I'm having
24 difficulty hearing you from the echo.

25 MS. SCHELLENBERGER: Do you have
26 the space -- do you have the ninety feet beside the road,

1 plus the space for the pipeline at the road, where you're
2 thinking of putting it through that region? Like, would it
3 be possible to put it right beside the road in the ditch.
4 Would you have the space for your access roads, you know,
5 for your construction roads as well? Because if you don't
6 -- like for your blasting. If you can't blast after the
7 pipeline is in, you're already going to have it ninety feet
8 wide anyways because you had to have it that wide to put
9 the pipeline through. So why would you have to blast?

10 MR. ELWOOD: We have to blast
11 the trench.

12 MS. SCHELLENBERGER: Well, that's
13 when you put it in, but the pipeline isn't going to be
14 operating when you're putting it in.

15 MR. ELWOOD: Oh, I was referring
16 to blasting after the pipeline was in. I was referring there
17 to possible work on the highway in which the highways crews
18 may wish to blast for the work on the highway.

19 MS. SCHELLENBERGER: What I'm
20 saying is, after -- you have to put your access roads, like
21 your construction roads in anyways. So to do that, you're
22 going to have to pretty well blast everything out in that
23 area anyways, so why would they need to do any blasting
24 afterwards?

25 MR. ELWOOD: Well, we wouldn't.

26 MS. SCHELLENBERGER: No, but the

Ms. K. Schellenberger
Mr. J. Elwood
Mr. B. Trevor

443.

1 highway. Why would they? If you've already done it, to put
2 your area through, you'll have cleared the area already, so
3 why would they need to do any additional? That's what I'm
4 asking. The highways?

5 MR. ELWOOD: We don't know what
6 the Highways Department might do in the future. When they
7 built the original Alaska Highway, there was no concept that
8 they would be paving it starting in a couple of years. We
9 just don't know what they're going to do in the future.

10 MR. TREVOR: Mr. Elwood, can I
11 ask you a supplementary please. If we were to consider
12 coming around that tight point at the bottom of Sheep
13 Mountain in the ditch so to speak, depth, and you would need
14 the entire road surface there to operate from.

15 Given that that distance may be
16 in the order of two hundred yards, for what length of time
17 in your opinion, would the highway have to be closed?

18 MR. ELWOOD: Well, I'm probably
19 not the best person to estimate that. I could give you my
20 feel for it as having been involved in pipeline construction,
21 but I would think that we could perhaps make in country like
22 that, a quarter of a mile a day progress through there.

23 If one is working in the ditch,
24 you can move your equipment off at night. If we had to
25 ditch in the road bed itself, the highway would be closed
26 until that were -- that operation were completed.

1 If you were ditching -- putting
2 the pipe ditch in the highway ditch, then you can move your
3 equipment off. You could work on different hours, you could
4 try and work out some schedule to -- or stop at every few
5 hours to allow traffic through, or one could try all sorts
6 of possibilities there, but --

7 MR. TREVOR: So in effect, the
8 delay may need be no longer than the current delays we
9 experience when the road washes out anyway?

10 MR. ELWOOD: The delay may be no
11 longer than what?

12 MR. TREVOR: The delays we
13 currently experience when the road washes out anyway? I
14 don't mean it washes out at that particular location, but
15 at other locations on the highway.

16 MR. ELWOOD: Well certainly, if
17 such a project were to be undertaken, we would make every
18 effort not to close the highway or to reopen it periodically.
19 One wouldn't close the highway for a week. That would be
20 I think, an untenable proposition. We'd just have to find
21 some other way to do it.

22 MR. TREVOR: Well, I was just
23 trying to get a feel for it. It seems to me that in the
24 order of a day might be feasible.

25 MR. ELWOOD: It would take longer
26 than that really, but one wouldn't have to --

Mr. B. Trevor
Mr. J. Elwood
Mr. L. Bouckhout

1 MR. TREVOR: Yeah, but there
2 would be times when you were working at night --

3 MR. ELWOOD: You could let
4 traffic through during that longer period.

5 MR. TREVOR: -- Thank you.

6 MR. CHAIRMAN: Questions from
7 the floor?

8 MR. BOUCKHOUT: I might if I may,
9 Dr. Hill, just make one or two other comments. In my
10 familiarity with the immediate area, there are a couple of
11 sections there where they virtually have no ditch. Along
12 Sheep Mountain, there are very short sections of the road
13 where you wouldn't virtually have to preclude any crossing
14 of the road at any time while the ditching was going on in
15 that area.

16 In other words, that may in fact,
17 be over a space of several days, a couple days, several days,
18 and very short sections. In terms of this as an alternative,
19 obviously it's one that -- there are several implications
20 too. When you cross a road, you utilize heavy wall pipe.
21 You cross it as close as possible at right angles to get
22 away from the road as quickly as possible. There are many,
23 as Mr. Elwood has mentioned, many other implications once
24 you're dealing with something that close to a road, which
25 would certainly have to be taken into account.

26 MR. CHAIRMAN: Mr. Chambers?

1 MR. CHAMBERS: I'll address this
2 to either Mr. Bouckhout or Mr. Elwood. Had you considered
3 the alternative on that particular piece of road which
4 passes through the rock, of hanging the pipeline somewhere
5 down the off the shoulder of the road in the lake?

6 You put suspended lines across
7 rivers. It would be a similar kind of a concept to suspend
8 it, because I understand the lake drops quite sharply -- at
9 quite deep depths at that point.

10 MR. BOUCKHOUT: I think, Mr.
11 Chambers, again that would put us essentially into a
12 position with exposed pipe, something we would prefer to
13 avoid wherever possible. I'm not sure exactly what you
14 mean by suspension, but I think the way it is necessary to
15 look at this and when I say alternatives -- and we've
16 mentioned you know, we've mentioned very numerous alternatives
17 in this area or any other area. A great deal of consideration
18 has to be put into evaluating the various alternatives.

19 Our preference is to find an area
20 to install the pipe which is stable, which can be done
21 within sound engineering constraints, and within sound
22 environmental and other constraints. If the preferred route
23 in that instance is not possible, then the alternatives must
24 be looked at.

25 As I've mentioned, we're discussing
26 this with various authorities in attempts to evaluate the

Mr. M. Williams
Mr. L. Bouckhout

1 current route and other alternatives.

2 MR. CHAIRMAN: Questions from
3 the floor?

4 I have a question while someone
5 is considering theirs, on the Squanga Lakes area. When
6 you were presenting your brief, you considered that there
7 would be a compressor station there as I understand it.

8 MR. WILLIAMS: Yes, I think we
9 were looking at the old forty-two inch Atlas. I don't
10 believe there is a forty-eight inch Atlas out there.

11 MR. CHAIRMAN: Yes, I'm looking
12 at it now. So as I understand it, there isn't a compressor
13 station proposed in that area now. How would influence your
14 conclusion?

15 MR. WILLIAMS: Well, we're still
16 faced with the problem of summer construction when it is
17 summer habitat for caribou, so that problem, you know, it's
18 still there. The problem of access has been reduced, but
19 a further comment -- it might be quite ill informed, but that
20 is actually -- what about the access once the pipeline is
21 built. Can four wheel drive vehicles actually drive along
22 the right-of-way? You know, is it, even though it's closed
23 to normal street vehicles, it is actually accessible and
24 perhaps --

25 MR. CHAIRMAN: Mr. Bouckhout?

26 MR. BOUCKHOUT: In general terms,

Mr. L. Bouckhout
Mr. M. Williams

Williams, we have no intention of purposely leaving the right-of-way in a condition which would permit access via certainly not conventional vehicles, four wheel drives, or anything in that nature, as a matter of course. There may very well, given the nature of the terrain in this area, which is to a considerable extent, very good construction terrain.

There may be some instances once the right-of-way is cleared, that it could in fact, be used as access by certain types of vehicles. I think in that respect, it becomes then a management consideration, that there are certainly ways of precluding that kind of access to a right-of-way of that nature, be they barriers or gates or whatever. That really is a management consideration that would have to be resolved with the agencies charged with management in co-ordination with ourselves.

MR. CHAIRMAN: Has everyone a place to sit there in the back? Any shortage of chairs? Fine.

Any other questions, comments from the floor? Any more questions from staff or Panel? Would you like to sum up your presentation? Anything you'd like to say in conclusion.

MR. WILLIAMS: Well, maybe I'll just summarize it very briefly then.

We see there being little data to

Mr. M. Williams

1 date to make an assessment, the quality of the data that
2 we've seen as being extremely poor. We're very fearful about
3 -- of the developments following along with the project and
4 I think we've mentioned those, you know, the loopings,
5 things like that.

6 We're concerned about major
7 diversions and minor diversions and synergistic effects too.
8 I think those are our major concerns. Thank you.

9 MR. CHAIRMAN: Thank you very
10 much. Would anyone like a cup of coffee? We'll break
11 before the next presentation and please help yourself.

12 (PROCEEDINGS ADJOURNED).
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1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

2
3 MR. CHAIRMAN: Mr. Bill
4 Klassen of the Wildlife Branch, Government of the Yukon
5 Territory, will you present the next brief?

6 MR. KLASSEN: The Yukon
7 Territorial Government's written Goals and Objectives, 1975,
8 set this goal for the Yukon Wildlife Branch:

9 "To maintain the Yukon's wildlife populations
10 at carrying capacity levels as well as the
11 Yukon's species diversity for the benefit
12 and enjoyment of the present and future
13 generations."

14 The permanent staff members of
15 the relatively small Wildlife Branch have begun programs to
16 achieve this goal, a most challenging task under ordinary
17 circumstances. Man-hours, funds, and equipment were already
18 allotted for various regular management projects when it
19 became aware that the Wildlife Branch, in order to fulfill
20 its mandate, must become involved in the Alaska Highway Gas
21 Pipeline Project. Members of the Wildlife Branch supplied
22 information to research consultants and critiques the
23 Foothills Pipe Lines (Yukon) Ltd. Environmental Impact
24 Statement. Responsibility for the management of the wildlife
25 affected by the proposed project resulted in a limited amount
26 of fieldwork along the route when this could be fitted into

The Wildlife Branch, as an agency of the Yukon Territory Government, must necessarily adopt a neutral stance on whether or not a gas pipeline should be built along this route. In this presentation we attempt only to give a view of the pending impacts of this project as presently proposed and make some recommendations for the reduction of such impacts. If we draw a distinction between direct impact of construction activity on the animals in close proximity to the route and indirect impact of this colossal undertaking on animals well away from the corridor, the magnitude of the problem may be more easily grasped.

To simplify the presentation, those problems already identified will be given by family or

1 species, beginning with non-migratory birds. Involved are
2 thirty-three species of birds belonging to four families:
3 grouse; hawks and falcons; jays, ravens and perching birds;
4 and owls.

5 On Grouse. Of the seven species
6 of grouse in the Territory, only the Sharp-tailed grouse is
7 a communal breeding (lek) species. Direct disturbance of
8 habitat and breeding populations is a real possibility
9 because the birds are tied to very specific types of habitat
10 for communal display. The problem is that the biology of
11 this bird in the Territory is largely unknown. What we do
12 know is that the line runs through occupied habitat near
13 the Snag Road junction and at the Duke Meadows. At least
14 two to three years of intensive fieldwork is required with ^{this}/₁
15 species prior to pipeline construction.

16 Winter habitat of many forms of
17 wildlife, including the most common and unique grouse, the
18 three species of ptarmigan, is very susceptible to
19 disturbance. Areas where the pipeline approaches shrub
20 tundra should be researched during winter to ascertain use
21 by ptarmigan, something which is obviously impossible in
22 the given Inquiry framework.

23 The Territory's grouse offer a
24 diverse range of upland hunting which promises to develop into
25 one of our most important forms of outdoor activity. This
26 must take place within the context of sound management

1 programs but before these can be devised for grouse populations
2 in the Yukon, serious gaps in our knowledge must be filled.
3 The grouse management problem increases in seriousness
4 because of the increase in potential hunters - a game bird
5 licence is inexpensive even for the non-resident pipeline
6 workers. We cannot even begin to do preliminary census work
7 the base from which to develop a management program, until
8 next spring. We feel the applicant should address management
9 problems such as interim protective measures and meaningful
10 research programs to arrive at management criteria.

11 On Raptors. Disturbance,
12 harassment and/or illicit removal of birds from nest sites
13 of raptorial birds poses a direct threat to the rarer
14 species (the sub-species of peregrine falcon that nests in
15 the southern Yukon is extinct over most of its range) and is
16 recognized by the applicant as potentially threatened by
17 construction.

18 Disturbance of raptor nests as
19 a result of the pipeline will not occur solely along the
20 right-of-way as implied by the applicant. Indirect distur-
21 bance will also occur in preferred feeding areas (for
22 example, the Duke Meadows) but especially along waterways
23 and access trails available to the burgeoning numbers of
24 persons looking for recreation in the "northern wilderness"
25 as a result of this project. For this reason, all waterways
26 accessible from the pipeline, especially those near camps

26 A number of problem areas

1 relating to large mammals; have also been identified.

2 Woodland Caribou. There will
3 be direct impact on two populations of this species. The
4 Burwash Uplands caribou numbering about two hundred, range
5 the area from the Donjek River to Halfbreed Creek adjacent
6 to the route alignment. While we know that members of this
7 population have this past winter been shot by hunters
8 outside the Kluane Game Sanctuary, that is northeast of the
9 Alaska Highway and the proposed pipeline right-of-way, we
10 do not know the full extent of their range nor their pattern
11 of use of it. These animals may even form a contiguous
12 herd with caribou known to winter between the Kluane River
13 and Brooks Arm of Kluane Lake. Late fall and during
14 winter, when these caribou have been seen near the highway,
15 is naturally a stressful period for them. Winter
16 construction planned for this section could be particularly
17 damaging to a herd which limited research has already
18 indicated as having low productivity.

19 The second woodland caribou
20 population is located in the Mt. Michie/Squanga Lake area.
21 Here the route's divergence from the highway right-of-way
22 transects winter range of approximately one hundred or
23 more caribou. The direct loss of winter range is coupled
24 with the indirect affect of increased access to the area,
25 particularly by snow-machine mounted recreationists or
26 hunters. This access could lead to increased hunting and/or

harassment of the caribou during a critical time of the year. Summer range of these animals would be affected in the Mt. Michie area. We are concerned that in the Squanga Lake area, construction might be re-scheduled from summer to winter because of bog conditions compounded by any heavy rainfall the year of construction. This could be severely disruptive to caribou on their winter range at a time of maximum natural environmental stress.

Our knowledge is limited on the numbers and movements of these big game herds, and while crash summer censusing, such as at present, is of some value, such short-term studies do not provide us with adequate data to predict impacts of the pipeline, nor propose adequate mitigative measures.

For both areas we need to understand annual movements, annual productivity. We would have to initiate studies using radio transmitters on caribou in order to follow movements in forested environments. A minimum of two years would be necessary to gain reliable information concerning the seasonal movements of these animals. Other recommendations would have to await the results of such studies.

Other caribou populations which might be indirectly affected by hunting or other human activities, as the result of increases in human populations in the area, are:

1 (a) Teepee Lake population,
2 ranging from the Donjek River in the east to the Alaska
3 border in the west. Animals may come close to the Alaska
4 Highway in winter in the White River-Koidern River areas.

5 (b) Kluane Hills-Cultus Creek
6 population, ranging from Kluane Lake in the west to Kloo
7 Lake in the east.

8 (c) Wolf Lake population,
9 ranging over the Cassiar Mountains. It may come into contact
10 with the Alaska Highway during winter around Morley Lake as
11 well as along the Rancheria River.

12 Dall Sheep. Sheep populations
13 which will be directly affected by the construction of the
14 Alaska Highway gas pipeline are the following:

15 Sheep Mountain-Mt. Wallance
16 populations: Up to two hundred Dall sheep use the Sheep
17 Mountain winter ranges. The proposed pipeline will destroy
18 some of the winter ranges and may also destroy the mineral
19 lick located above the cabin. Construction may also interfere
20 with range use and lambing if it is not properly timed. This
21 population has been under observation for the past eight years
22 and no further studies are needed to make proper recommenda-
23 tions.

24 Specific recommendations which
25 can be made at this time are:

26 (a) Keep people off the mountain

1 at all times.

2 (b) Route the pipeline in a
3 manner not to destroy open grassland vegetation which makes
4 up the winter forage for these animals. This would mean
5 placing the pipeline beneath the road through this extremely
6 sensitive area - I believe others have already suggested
7 this to Foothills.

8 (c) Leave intact the site of
9 the mineral lick above the cabin, since it is heavily used
10 during the months of late April, May and early June.

11 (d) Do not carry on any
12 activity on Sheep Mountain during the period the sheep are
13 on the winter range. Many years of observation have shown
14 that the sheep use the area under consideration until
15 about June 10th to the 15th, depending on weather, and
16 return to the mountain about September 15th.

17 The Williscroft Creek area
18 population: Up to forty sheep use this area as winter range
19 and lambing area. The timing is similar to their use of
20 Sheep Mountain.

21 The same recommendations as for
22 Sheep Mountain would also apply here.

23 Outpost Mountain: Several
24 gullies along the west side of this mountain between Milepost
25 1055 and 1058, and those are highway mileposts, are used as
26 late winter range by rams of the Vulcan Mountain population.

1 Up to twenty have been observed here several years during
2 April and May.

3 It is recommended that no
4 construction be carried out in this area during these months.

5 Mt. Ibex, Arkell, and Ingram
6 sheep population: The total population of sheep using this
7 complex is known to be well in excess of three hundred
8 animals. How many of those use the Ibex River Pass area
9 traditionally is presently not known. Sheep numbering up to
10 forty have been observed on the isolated mountain north of
11 the Ibex River at various times of the year. I believe
12 that's the mountain that the Foothills Consultants are now
13 referring to as Mount North Ibex. This mountain is a
14 lambing area and as such would be used annually in May.
15 Sheep have been observed here as well in August and September.
16 Additionally, the mountain serves as winter range, sheep
17 having been seen on it in February.

18 Routing the pipeline through
19 the Ibex River valley bisects this sheep range, creates
20 easy access to it, and necessitates the location of a
21 compressor station in a critical area - a route used by
22 sheep moving to and from Haeckel Hill, known summer range
23 for nursery sheep.

24 Because of the sensitivity of
25 this area due to its importance to a sheep population, our
26 only recommendation is: re-route the pipeline out of this

1 area to a location closer to the Alaska Highway.

2 Cassiar Mountains near Rancheria
3 River: This mountain range continues across the border into
4 British Columbia and is known to support a population of Stone
5 sheep. No surveys have ever been conducted in this area by
6 the Yukon Wildlife Branch or by anybody else.

7 Any recommendations concerning
8 the routing of the pipeline or timing of construction in this
9 area will have to await completion of surveys in the area
10 to establish population status and range use.

11 There would be indirect effects
12 on other sheep populations. All mountain ranges along the
13 entire north Alaska Highway from Whitehorse to Beaver Creek
14 support sheep populations at least at certain times of the
15 year, (the few exceptions are Gray Mountain, Kluane Hills
16 and Pickhandle Lake Mountain) and all of them are close
17 enough to the proposed pipeline route to be adversely affected
18 if the use of machinery and the behavior of people is not
19 stringently controlled and closely monitored. Along the
20 south Alaska Highway both sheep and goat are found in the
21 Cassiar Mountains between Morley Lake in the west and Little
22 Rancheria River in the east.

23 Moose. The entire Alaska Highway
24 pipeline route is moose habitat and it is difficult to single
25 out "critical" areas because of the fact that many potentially
26 good ranges are not filled to capacity because of severe

1 hunting pressure along the highway and because of competition
2 with horses in many locations along the route.

3 The following good moose
4 ranges may be directly affected because of their proximity
5 to the proposed pipeline route:

6 (a) Koidern River-Pickhandle
7 Lake "Pothole" country, which appears to be primarily a
8 summer range.

9 (b) Donjek River floodplains -
10 primarily winter range, but islands are also used by cows
11 for calving.

12 (c) Kluane River floodplains -
13 good year-round range.

14 (d) Kloo Lake-Jarvis River
15 area - primarily winter range.

16 (e) Morley Bay-Eagle Bay area -
17 primarily winter range.

18 (f) Rancheria River-Liard
19 River basins - primarily winter range.

20 Moose surveys at different
21 times of the year are necessary to determine intensity of
22 use through the seasons. Only then can proper recommendations
23 be made regarding the time of construction activities.

24 Elk and Deer. These rare
25 animals are found along the north Alaska Highway between
26 Whitehorse and Champagne. Individuals or small groups have

also been reported from other areas.

Nothing is known about their seasonal movements and range requirements and therefore no specific recommendations are possible at this time.

Fur bearers have not received much attention during environmental assessment work. Other than wolves, the proponent has only attempted to delineate habitat for the aquatic fur bearers, beaver and muskrat.

Significant areas of suitable semi-aquatic fur bearer habitat along the route, however, are not indicated in the Foothills Environmental Atlas. These areas will be outlined at the July hearings.

More information is necessary on the effect the pipeline will have on terrestrial fur bearers. The general portion of the route extending from Teslin Lake to Watson Lake passes through large areas of prime marten habitat. This area accounted for 84 per cent of all marten taken on trapping areas adjacent to the pipeline route in the Territory between 1971 and 1976 and warrants more investigation. No information is available on suspected wolf denning areas along the route in the vicinity of Duke Meadows, Kloo Lake, Marsh Lake, and Judas Creek. Trapline records also suggest high numbers of wolves and wolverines between Morley Lake and Pine Lake. In the Mt. Michie/Squanga Lake area the route passes through an excellent interspersed of fur bearer habitat types. This area appears to have a high

1 capability for beaver, wolves, marten, and wolverine.

2 Mammals such as bears, wolves,
3 coyotes and foxes will be adversely affected indirectly as
4 a result of the pipeline project because of lack of concern
5 and carelessness in handling food and garbage at construction
6 camps. This frequently results in the unnecessary destruction
7 of, particularly bears because of real or imagined danger to
8 humans.

9 We would like to express our
10 concerns about a few other points. One of the more obvious
11 of these is the deviation from existing rights-of-way for
12 no obvious reason. This is particularly troublesome in the
13 Kluane Game Sanctuary. We legislate against hunting in this
14 area but because we do not control the habitat which is at
15 least as essential to the wildlife as is protection from
16 hunting, damage to the wildlife resource may result anyway.
17 The Yukon Territory is not overly rich in wildlife sanctuaries
18 and Foothills should not be permitted to reduce the size and
19 useable areas of an existing one by increasing disturbed areas
20 within it with right-of-way clearance, storage area and
21 camp site construction.

22 Another is the impact of
23 increased hunting pressure by pipeline workers. This impact
24 will be felt not only along the route, but all over the
25 Territory, for pipeline wages will enable these people to pay
26 for guiding services in or charter flights to remote parts of

1 the Territory. To some degree this can be controlled by
2 legislation, but that means a greater enforcement workload
3 for the eight conservation officers who presently enforce
4 game laws in the whole Territory.

5 At this time we will not
6 delineate our concerns over the possibility of a Dempster
7 Highway gas pipeline connecting to this proposed pipeline
8 except to make these points. We have strong fears for the
9 continued utilization of that portion of the Porcupine
10 caribou herds winter range to the east of the Dempster
11 Highway if the road is finished. Construction of a gas
12 pipeline adjacent to this road would compound those fears.
13 There are sheep populations in the Ogilvie and Richardson
14 Mountain ranges which would be negatively affected by the
15 influx of people accompanying such a project. The problems
16 associated with ptarmigan wintering habitat will be especially
17 acute because the highway traverses so much shrub tundra.
18 Further north, falcon populations become more and more
19 dense, increasing the likelihood of disturbance. Our
20 submission in July to this panel will present as much detail
21 as is possible to compile in that space of time on the
22 Dempster lateral issue.

23 We have purposely not taken
24 Foothills to task for their Environmental Impact Statement.
25 This has already been done and will doubtless be done again
26 by others. We can only emphasize that at present there is a

1 lack of existing information to allow us to adequately assess
2 potential impacts; lack of time for us to compile necessary
3 data; and on the basis of our limited present knowledge,
4 the need for quite a few alterations in the proposal in
5 order to reduce impacts. As the agency charged with the
6 responsibility of managing the Territory's wildlife
7 resource, we feel we require more information, more time,
8 and the proponents co-operation in order to fulfill that
9 responsibility insofar as this proposed gas pipeline affects
10 it.

11 MR. CHAIRMAN: Thank you very
12 much. Do the members of the panel have any questions for
13 clarification?

14 Mr. Trevor?

15 MR. TREVOR: Perhaps we could
16 use this opportunity to really pin down the information on
17 the Mt. Michie/Squanga Lake area. I think there's some
18 confusion over this area and I certainly would like to get
19 the exact facts.

20 Is it correct to state that in
21 the area between the M'Clintock River and Squanga Lake, that
22 this is both a winter and a summer range, and that in
23 essence we're just dealing with difference in elevation to
24 determine where the caribou would be at any one point in time?

25 MR. KLASSEN: Yes, the Squanga
26 Lake area and Judas Creek is the area that we are concerned

Mr. B. Klassen
Mr. B. Trevor
Mr. C. Wykes
Dr. D. LaCate

466 .

1 about as winter range for caribou, and on Mt. Michie and
2 the upper elevations we are concerned about summer range.

3 MR. TREVOR: Thank you.

4 MR. CHAIRMAN: Mr. Wykes?

5 MR. WYKES: Mr. Klassen, would
6 the Game Branch, with the information available to them at
7 this stage, be prepared to prioritize the impacts of the
8 proposed pipeline on the non-migratory birds, the big game
9 and fur bearers?

10 MR. KLASSEN: Not now, but we're
11 hoping to be able to do that at the July hearings.

12 DR. LACATE: Mr. Klassen, on the
13 first page you mentioned that three biologists will have time
14 only for limited preliminary field work along the proposed
15 Alcan route, and you mentioned that you will have something
16 available for the Dempster alternative. Will there be any
17 information provided for the other alternatives? Is there
18 any possibility at all?

19 MR. KLASSEN: By the other
20 alternatives, you are referring to the Tintina Trench?

21 DR. LACATE: Tintina Trench,
22 Klondike Highway.

23 MR. KLASSEN: I'm afraid not.
24 The funds that were made available to hire these three
25 biologists were spelled out for work along the Alcan route
26 and we have some information on the Dempster route already

1 because of the biologist who was working up there this past
2 winter and experience of other people within the Branch who
3 have worked in the northern Territory.

4 The Tintina Trench and the
5 Klondike route is, well at least, insofar as the Tintina
6 Trench is concerned, it's difficult to comment on it because
7 we haven't as yet seen a line drawn on a map for that route.
8 So, unless we have -- our money is made available to us to
9 hire additional biologists, I don't see how we would be
10 able to have anybody look at the Tintina or Klondike routes.

11 MR. CHAMBERS: I wonder if you
12 would like to express an opinion on the terrestrial fur
13 bearers. During our community meetings, we had expressed to
14 us several times, on the pipeline right-of-way and the effects
15 it would have on the terrestrial fur bearers and you have
16 expressed somewhat in your paper you see as increased
17 access or actually a loss of habitat, or what do you see as
18 the effect that it may have?

19 MR. KLASSEN: Well I'm not
20 qualified to comment at length on terrestrial fur bearers,
21 and the person who is will be available in July, but I think
22 I can say safely now that a couple of the problems that we
23 were looking at are increased access and some habitat
24 destruction and the third one is the effect of these cleared
25 strips on some of the fur bearers, such as marten which some
26 research has apparently shown tend to avoid these clear cut

Mr. C. Wykes
Mr. B. Klassen

468.

1 lines and so it might deflect their movements.

2 MR. CHAIRMAN: Mr. Wykes?

3 MR. WYKES: Mr. Klassen, could
4 you tell me the -- the salt lake you were talking about above
5 the cabin, the bottom of Sheep Mountain, how critical that
6 is to the livelihood of the sheep population, how large it is
7 and perhaps whether or not the proposed pipeline routing
8 passes through that, above it or below it.

9 MR. KLASSEN: No, I can't comment
10 to any great extent on that. I personally am not aware of
11 the exact location of it. Dr. Huffs(?) would be able to
12 comment on that and he will be on the Panel in July.

13 The lake is essential to the
14 use after lambing. I believe that's a major concern.

15 MR. CHAIRMAN: We've heard at
16 this Inquiry, opinion that in fact, a cleared right-of-way
17 would increase habitat for some animals -- some wild animals
18 -- instead of actually decrease it. Could you tell us whether
19 or not that would be possible for the caribou, that the
20 building of the pipeline and regrassing -- after it's re-
21 grassed that the habitat would actually be decreased?

22 MR. KLASSEN: Would actually be
23 increased?

24 MR. CHAIRMAN: Your suggestion
25 I think, is that it would be decreased.

26 MR. KLASSEN: Yes.

Mr. E. Klassen

1 MR. CHAIRMAN: Could you go into
2 that a little further?

3 MR. KLASSEN: Well, caribou feed
4 primarily on mosses and lichens and of course, these are a
5 climax feature and so it takes a considerable length of time
6 for them to grow to the state where they serve as feed for
7 these animals. So the concern with habitat destruction is
8 that it decreases the amount of available winter forage for
9 these creatures and it takes a long time. I'm not prepared
10 to say how many years for that feed availability to come back
11 to that level.

12 Again, in July, we'll ^{have} somebody on
13 the Panel who will be able to respond more specifically.

14 MR. CHAIRMAN: We've also heard
15 that elk need open areas in order to graze and I notice
16 you are concerned about the destruction of habitat for elk.
17 Exactly what did you say about elk?

18 MR. KLASSEN: I don't think I
19 identified a specific concern for elk. The elk that were
20 transplanted into the Yukon in the 1950's are not doing at
21 all well. Their range insofar as I'm familiar with it, having
22 only worked briefly with the project concerning elk, is both
23 grassland and forested area.

24 At this time, I don't think we
25 can identify any particular concerns about elk because we're
26 not sure how much use they make of the area that the pipeline

Mr. B. Klassen
Mr. L. Chambers

1 would be going through. We haven't yet found where they are
2 at all times of the year.

3 MR. CHAIRMAN: In your first part
4 of your paper, you outlined several research needs in order
5 to determine the effects on grouse and so on. How much of
6 this research is required and going on at any rate because
7 of impacts on these birds?

8 MR. KLASSEN: Well, eventually
9 we would hope to do these projects as a matter of course.
10 It's just that the increased numbers of hunters and the
11 direct impact by way of habitat destruction of the construc-
12 tion of the pipeline rushes us into projects that we haven't
13 yet budgeted for, but eventually, we would be getting or
14 setting up sound management programs, for instance, upland
15 game birds.

16 MR. CHAIRMAN: Mr. Chambers?

17 MR. CHAMBERS: Mr. Klassen,
18 there seems to be two contradictory type of statements, maybe
19 they're not. On Page 8 of your presentation, you cite the
20 Haeckel Hill and as you are well aware, the Ibex Pass. It
21 seems to be somewhat of an issue as being you know, sheep
22 moving to Haeckel Hill, the -- and known summer range for
23 nursery sheep.

24 I have a report in front of me
25 which states the impacts on this, the likelihood of this,
26 however, is minimal. Sheep have not been reported on Haeckel

Mr. L. Chambers
Dr. Beanlands

1 Hill for several years. Can you clarify which -- are those
2 complementary statements or conflicting statements?

3 MR. KLASSEN: They're unfortunately
4 conflicting statements. I read the Foothills' report to
5 which you refer and we knew generally that Haeckel Hill was
6 a summer area for nursery sheep and so I went to people who
7 were cited as having seen sheep on that hill. One is, well
8 I didn't ask for permission to use his name, but he's a
9 tower man, works on the fire tower on Haeckel Hill for the
10 Yukon Forest Service.

11 The summer of 1975 he saw
12 immature rams on that mountain. Another person who I don't
13 think will mind my using his name is John Ostashek, an
14 Outfitter who I believe appeared before this Panel. He said
15 that in 1976 or 1975, he saw a band of twenty-five to thirty-
16 five nursery sheep on the south...I believe it's the south-
17 easterly slope, approximately a quarter mile from the Forestry
18 Tower on Haeckel Hill, so these nursery sheep were making
19 use of that. That was in the summer. It was in July when
20 he was flying past there so these nursery sheep were using
21 that as summer range.

22 MR. CHAIRMAN: Questions from the
23 staff? Dr. Beanlands?

24 DR. BEANLANDS: Mr. Klassen, based
25 on your familiarity with the work -- with their work -- do you
26 feel that Foothills has sufficient wildlife information and

Dr. Beanlands
Mr. Klassen

1 data to make an adequate impact assessment of the proposed
2 pipeline route?

3 MR. KLASSEN: No. I can
4 elaborate a bit on that. I don't think that Foothills has
5 come up with sufficient environmental information. For
6 instance, the National Energy Board to issue the permit to
7 begin construction on the route and I don't think that there
8 is sufficient information for this Panel to make recommen-
9 dations as to whether such certificate should be issued or
10 not.

11 I feel, and I said so in this
12 brief, that there is considerable amount of research that
13 has to be done first before recommendations can be made to
14 reduce the impact and if pipeline construction was to go
15 ahead, we wouldn't have the opportunity to make those
16 recommendations and see them put into force.

17 DR. BEANLANDS: Well, pursuant to
18 that, again based on your obvious familiarity with the
19 logistics of wildlife research in the Yukon, do you feel that
20 Foothills can gain the required information by the beginning
21 of the first construction phase, say planned for '79 or '80?

22 MR. KLASSEN: Well, I'm not sure
23 how that construction will take place. I've never been
24 around where a pipeline was built and I don't know whether
25 an extensive amount of work is required in the field by
26 survey parties along the route alignment and so, some of the

1 impact of pipeline construction will be felt before construc-
2 tion -- if construction means what I think it means -- and
3 that is that machinery is on the ground.

4 So I don't think that by 1969,
5 they would have a sufficient amount of information to
6 decrease or to avoid all of these impacts that we've cited
7 and there will probably be some more by the time we appear
8 before this Panel again in July.

9 If there was to be absolutely no
10 work done in the field before construction begins in the
11 summer of 1969, that gives us two years and if a sufficient
12 number of men and funds were made available, they could
13 probably do a lot of the work that we feel is necessary.

14 DR. BEANLANDS: Thank you.

15 DR. HUGHES: It is true that,
16 as I understand it, that both your recommendations relate
17 to avoidance of particular sites. Now it seems to me that
18 if there is to be the kind of inventory that you need for
19 a wildlife habitat and the wildlife use of that habitat, that
20 that has to come before then, the final consideration of the
21 route location and that route location must precede the kind
22 of final design planning that is necessary to, you know, so
23 far as overcoming geotechnical problems and so forth so that
24 we're then talking about a much longer period than -- it would
25 seem to me, there's going to have to be a period of a couple
26 of years beyond the kind of research or inventory you're

Mr. B. Klassen
Dr. Hughes
Mr. F. Claridge

474.

1 talking about before this thing can get started. Is that a
2 reasonable assumption?

3 MR. KLASSEN: I don't know,
4 because as I said, I don't know what sort of work is necessary
5 to be done before a pipeline construction can begin.

6 DR. HUGHES: Well perhaps I
7 could direct the question to Foothills and perhaps more
8 specifically to Mr. Claridge. How much -- once a route is
9 defined or at least certain limits put on the route by the
10 biological concerns, then how much time is the geotechnical
11 engineer going to require to pick the best route to obviate
12 all the concerns that have been expressed about thaw settle-
13 ment and various other concerns that we've heard this after-
14 noon?

15 MR. CLARIDGE: I think we've
16 said in the past, Dr. Hughes, that a period of about -- a
17 minimum period of about twelve months would be necessary to
18 conduct the final route location studies and to collect the
19 design data and to proceed with designs.

20 Now in addition to that, there
21 would have to be design alterations into the construction
22 phase. There is available, another, I believe it's another
23 year to a year and a half as construction proceeds. Now what
24 I mean by that, the initial year of construction would proceed
25 over approximately half of the route. Design would be done
26 in the twelve months available prior to that and design on

Mr. F. Claridge

Dr. Hughes

1 the remainder of the route would be undertaken while con-
2 struction proceeds on the initial half, so in effect, there
3 is from twelve to somewhat in excess of twenty-four months
4 available. I feel that is sufficient.

5 Now, what I haven't commented on
6 and what should also be taken into account, is the possible
7 time effect of reviews by a presumed government review body
8 and that is somewhat indeterminate I think at this time,
9 until regulations and a particular body have been established.
10 I'm looking at it from the point of view that such a body is
11 there and the regulations are in effect and sufficiently in
12 advance of design that they can be properly accounted for.

13 DR. HUGHES: Can I take it
14 though, you are agreeing with me that the -- as a geotechnical
15 engineer, you have to understand before you get serious about
16 your geotechnical design and the design of the pipe itself,
17 you have to know what the constraints are on your route with
18 respect to, particularly to the biologic concerns?

19 MR. CLARIDGE: Yes, certainly that
20 is true and hopefully, geotechnical concerns for the route
21 as well as biological concerns can be accounted for to as
22 large a degree as possible simultaneously. I think perhaps
23 Mr. Bouckhout would like to amplify on that.

24 I think to a large extent they can
25 be done together in a multi-disciplinary action. This has
26 been done, I think to some extent, on suggested route re-

Dr. Hughes
Mr. F. Claridge

1 locations that -- there are very frequently concerns from a
2 biologic point of view, coincide with physical concerns. For
3 instance, that stream crossing where an unstable slope is
4 present. The biologists are concerned about siltation and
5 effects on fish and very very frequently, consensus is arrived
6 at to alter a location and the various members, various
7 disciplines arrive at a consensus.

8 I think this can be done in a
9 majority of instances.

10 DR. HUGHES: Well, the reason why
11 I pursue this question is that it seems to me that there
12 could be some -- it's quite possible that a choice between
13 -- a major choice between routes could depend somewhat on
14 how long it would take to get the final design ready for a
15 route. This may be of interest to the government and I
16 think this Panel should be prepared to address that.

17 MR. CLARIDGE: I think to a great
18 extent, a route that is acceptable to a -- let's say a ninety
19 per cent degree, ninety-five per cent degree can be arrived
20 at very early in the final design phase, based on detailed
21 photo-interpretation and a review of what sub-surface material
22 is available.

23 In other words, you can early on,
24 come at a likely route in which design proceeds and biologic
25 studies proceed, then you must accept that there will be some
26 changes when the detailed drilling and other surveys are con-

1 ducted and be prepared to accommodate some shifts. But I
2 don't think at that point, you'd be looking at major shifts
3 in the route. They'd be generally within I should think,
4 a thousand feet, two thousand feet of what had been initially
5 proposed, and as I understand it, in most instances the
6 biological program would be conducted in a sufficient corridor
7 that it would be applied to I think the vast majority of
8 possible relocations.

9 I'm saying you would have a
10 reasonably precise corridor defined before you went out and
11 did your final drilling and you're unlikely to shift outside
12 of the corridor that would be studied biologically. So I
13 don't see there would be a major impact in scheduling the
14 biologic and geotechnical programs. That's my view.

15 DR. HUGHES: Right, thank you.

16 MR. CHAIRMAN: Ms. Archibald?

17 MS. ARCHIBALD: Was the Conser-
18 vation Society correct in assuming that the Game Branch
19 may only control the length of the seasons and not the number
20 of licences that you issue?

21 MR. KLASSEN: I believe there is
22 provision in the Game Ordinance for a regulation to be made
23 under a Commissioner's signature for the number of animals
24 of a given species that can be taken within some particular
25 game management zone in a given season.

26 I don't have a copy of the Game

Mr. B. Klassen
Ms. Archibald

478.

1 Ordinance here but I think that the authority for that is
2 there, so that --

3 MS. ARCHIBALD: Has this ever
4 been done in the Yukon?

5 MR. KLASSEN: No, the only --
6 no, I don't think it has ever been done. We have shortened
7 seasons in certain game management zones. We have closed
8 seasons for a certain species in some game management zones
9 but we have never regulated the numbers of a given species
10 in any one zone that can be taken in any one season.

11 MS. ARCHIBALD: So anyone
12 whether they're a resident or not, if they can come up with
13 the money can buy a licence for whatever species they want
14 at the moment?

15 MR. KLASSEN: Yes, there is some
16 restriction of course, on the number of animals that can be
17 taken in an area. Regulations such as the size of the
18 animal for instance, three-quarter curl sheep or larger and
19 in some game management zones, full curl sheep or larger, so
20 that not all Mayo sheep in that area will be shot.

21 MS. ARCHIBALD: Would construction
22 on Sheep Mountain destroy part of the sheep's winter range
23 on there?

24 MR. KLASSEN: Yes, that's the
25 concern that if the pipeline went up over the shoulder of
26 the mountain, it would be crossing grassland areas and this

Ms. Archibald
Mr. B. Klassen
Mr. D. Low

1 is sheep winter forage.

2 MS. ARCHIBALD: We heard evidence
3 during a brief presented by Neil Olsen of Haines Junction
4 who worked on the sheep there for several years, that the
5 area is over-populated right now with sheep and that the
6 range is in very poor shape already. Is this correct?

7 MR. KLASSEN: I can't comment on
8 that, but Dr. Huffs(?) will be here in July and he did his
9 PhD work on Sheep Mountain. He's probably the most knowledge-
10 able person in the territory on the sheep and that particular
11 mountain, so if I may wait until then to answer that question.

12 MS. ARCHIBALD: One last question.
13 Does the Game Branch currently have sufficiently large budget
14 and staff to check the hunters and fishermen in the remoter
15 areas of the Yukon?

16 MR. KLASSEN: Not at all. We
17 have eight conservation officers who are charged with enforce-
18 ment of the Game Ordinance regulations and several other
19 ordinances besides. They cover the whole territory or they
20 try to and with the number of roads that are there and the
21 air charter operations that are available, it isn't at all
22 possible to cover the whole territory adequately.

23 MS. ARCHIBALD: Thank you. That's
24 all the questions I have.

25 MR. LOW: Mr. Klassen, how
26 possible would it be to have hunting closed along the Alaska

Mr. D. Low
Mr. B. Klassen

1 Highway during the pipeline construction? Is that possible?

2 MR. KLASSEN: Well there again,
3 that would require a regulation change. I believe they did
4 that in Alaska during construction of the Alyeska line from
5 the Yukon River north and they closed it five miles on either
6 side of the line.

7 We've corresponded with the
8 Alaskan authorities on the effectiveness of that and they
9 said that they -- they didn't give us the statistics on the
10 number of violations in that area, but it increased the
11 enforcement load on the man that was stationed in that area.
12 So yes, it's possible, but then we are looking at an increased
13 enforcement workload.

14 MR. LOW: Right. Relating to
15 Page 10 on your brief here, you're talking about some eighty-
16 four per cent of the marten be coming from one part along the
17 pipeline route. Are marten being actively trapped along
18 the route?

19 MR. KLASSEN: I have to qualify
20 my answer. I'm not that familiar with the fur returns, but
21 on the basis of my experience in that part of the Yukon, yes,
22 they are quite sought after in that area by the trappers there,
23 because as I said in the brief, there is some prime marten
24 habitat from Teslin on down. Well, I can't give you a price
25 for marten skins last year but I believe it was sufficient to
26 induce trappers to actively seek marten.

Mr. D. Low
Mr. B. Klassen

1 MR. LOW: Right. Well, it's been
2 my impression from talking to trappers along the route, that
3 the trappers nowadays are becoming very opportunistic and
4 you no longer have your hearty trapper that tracks three
5 miles back into the bush. Do you think there, the pipeline
6 route would indeed stimulate more trapping, not only of
7 marten but of other species?

8 MR. KLASSEN: I don't know. A
9 pipeline route might increase the ease of access for the
10 trapper, but at the same time, it would make the area
11 accessible to others and this apparently has been a problem
12 on some trapping areas already, that people on snow machines
13 follow the trails that the trapper has cut at considerable
14 expense of time and labour. They destroy sets either
15 accidentally or intentionally so that increased access on a
16 trapline could have both effects -- good and bad.

17 MR. LOW: Relating to peregrine
18 falcons, I say it's -- nests in the southern Yukon, appear
19 to be extinct. Is that extinct or just a rare occurrence?
20 Is that species always -- has been a rare occurrence or is
21 it authenticated that it is extinct? On Page 3:

22 MR. KLASSEN: No, the sub-species
23 of the peregrine falcon that nests in this area, is extinct
24 over most of its range. It doesn't necessarily mean it's
25 range in the Yukon. I don't know the numbers of peregrine
26 nest sites in the southern Yukon. It does still nest here,

Mr. B. Klassen
Mr. V. Schilder

1 but whether the survey of raptor nesting sites in the
2 territory has included any extensive work in the southern
3 Yukon, I don't know. I don't think so, so it isn't the --
4 this particular sub-species is isn't necessarily extinct in
5 the southern Yukon. It's still in the area but it's extinct
6 over most of its range which goes down into other parts of
7 Canada.

8 MR. LOW: Thank you.

9 MR. SCHILDER: Mr. Chairman, I
10 have a question for Mr. Klassen. I don't have the same in-
11 sight because of different background to wildlife problems,
12 but I noticed within your presentation that it seemed to me,
13 if my perception is correct, that there seemed to be a
14 conflict of interest between the schedule for -- on the side
15 of the applicant and between your requirements to do various
16 studies.

17 The conflict indicates that there
18 isn't enough lead time on your -- on both sides to be in
19 harmony. In connection with that, would you consider the
20 potential damage for wildlife due to various errors in case
21 that you might not have enough time or you might not have the
22 optimum time available. Would you consider that type of
23 damage as irreparable or would you consider that type of
24 potential damage as long term or rather short term? Could
25 that type of damage be perhaps to a certain degree or com-
26 pletely outweigh through perhaps a ban on hunting imposed

Mr. B. Klassen

1 within certain areas or perhaps some other measures?

2 MR. KLASSEN: Your question
3 isn't easy to answer simply and I'm not prepared to attempt
4 to answer it fully now. I think we will cover most of the
5 points that you raised, in July when we appear before this
6 Panel again.

7 But for now, some of the damage
8 that would be done if the pipeline went through its present
9 routing without any more field work, could be irreparable
10 in that the lengths of time that we're used to thinking in.
11 For instance, if sheep are disturbed sufficiently by activity
12 of construction or by hunters or by people just coming into
13 the area and harassing them intentionally or otherwise, if
14 those sheep move off that range, they may not return, because
15 sheep use range traditionally and if they are forced from
16 the area and the leaders of those particular groups of sheep
17 die out, then the memory of how to get to those areas dies
18 with them.

19 That's fairly simplistic, but
20 we'll have a person on the Panel in July who will be able to
21 elaborate on that. With respect to birds, in particular,
22 falcons, if nesting sites are destroyed by blasting of rights-
23 of-way through certain mountainous regions and those nesting
24 sites are gone, there is a program -- a proposed program of
25 reintroduction of birds to formerly occupied sites. So as I
26 said in the brief, even sites that are not now occupied, may

1 be quite useful to us in a reintroduction program later.

2 As to conflict of interest, I
3 am not sure that I understood what you meant.

4 MR. SCHILDER: Well, I -- if I
5 could explain, I meant that as we had the explanation of one
6 of the experts on the team of the Foothills, there is a need
7 for certain lead time to collect various information available.
8 You know, the final line could be selected and finally put
9 on the drawing -- into the drawing plans.

10 You have required in most cases,
11 in most -- it's my recollection -- in most cases in your
12 briefing, lead time to three years to draw your conclusions.
13 So if we keep into account that at present, the applicant is
14 thinking about starting his construction in 1979, keeping in
15 mind the existing date, there is a conflict of interest in
16 time -- in lead time. That's what I meant.

17 MR. KLASSEN: Well I don't think
18 that we looked at the construction date when we were giving
19 these numbers for the required time to do the research. I
20 don't think we -- at least if it was done, I wasn't aware of
21 it. We didn't take the applicant's proposal and say well,
22 he wants to start in 1979 and we need information, so we'll
23 say that it will take us a minimum of that length of time
24 and therefore, maybe wring some money out of him. That
25 wasn't our intent, I assure you.

26 MR. CHAIRMAN: Mr. Lister?

Mr. B. Lister
Mr. B. Klassen

1 MR. LISTER: Mr. Klassen, I just
2 wanted some clarification concerning construction timing and
3 effects on caribou. You mentioned in a couple of places
4 on Page 5 of your brief, concerns that Foothills propose to
5 construction timing, is at conflict with the range use of
6 caribou.

7 In the first case, up along
8 Kluane River and Kluane Lake.

9 MR. KLASSEN: Right.

10 MR. LISTER: But the second case,
11 I'm not entirely clear on here from your statement. I take
12 it that you don't agree that planned summer construction in
13 the Squanga Lake area is in fact, feasible or may not be
14 feasible and you have some concern that the construction
15 period will shift to the winter period when caribou are using
16 that area.

17 MR. KLASSEN: Right. Yeah, that's
18 our concern if presently, according to the information that
19 Foothills has produced, construction in that area is scheduled
20 for summer in the Squanga Lake area and the area has a certain
21 number of upland bogs and things of topographical features
22 that in the event of an extremely wet summer, might make it
23 necessary to reschedule the work into winter. If that is
24 the case, then we're faced with disturbance of caribou on
25 winter range, especially cows carrying calves -- any stress
26 or additional stress during that time of the year could be

Mr. B. Lister
Mr. B. Klassen

486.

1 of -- disastrous.

2 MR. LISTER: Do you see any way
3 of overcoming that problem? Any sort of change in the
4 location of the route?

5 MR. KLASSEN: Well, yes, if the
6 route were to be moved from the north side of the lake to
7 the south side, and I suppose there to the south side of the
8 highway, that would get them out of the area that's actively
9 used by those caribou in the wintertime.

10 MR. LISTER: It would take large
11 a relocation to overcome the problem?

12 MR. KLASSEN: On the basis of
13 the knowledge that we have at present, yes, because we don't
14 know how much use or what areas of that particular range
15 along the route the caribou use, so that's why we have
16 proposed additional research studies in that area.

17 It's difficult to recommend a
18 route change in there without knowing more about the caribou
19 than we do now.

20 MR. LISTER: I have on other
21 question, Mr. Chairman. Could you elaborate on the kinds of
22 impacts we might expect on moose populations. You say they
23 may -- a number of populations or moose in a number of areas
24 may be affected, primarily on winter range.

25 What sort of impact would the
26 construction on the line have?

Mr. B. Klassen

Mr. B. Lister

1 MR. KLASSEN: Well it would have
2 the immediate effect of disturbance. There would be some
3 destruction of winter range repair in willow or wetland
4 vegetation. This of course, would be offset some years later
5 I suppose, by regrowth of that sort of vegetation along the
6 right-of-way if it's left to revegetate naturally.

7 The only disturbance that I can
8 cite now is that one of direct disturbance because of con-
9 struction in the area. In the wintertime, there would be of
10 course, indirect disturbance of hunter access and that sort
11 of thing, harassment.

12 MR. LISTER: So it's a somewhat
13 reversible impact?

14 MR. KLASSEN: Yes, eventually
15 there could be moose forage along the right-of-way in certain
16 locations.

17 MR. LISTER: Thank you.

18 MR. CHAIRMAN: To follow that
19 up, would there be a way of walking that area that is
20 anticipated caribou habitat, to determine if in fact, caribou
21 utilize the area?

22 MR. KLASSEN: In the Squanga Lake
23 area, yes. The biologist who is hired to do that research,
24 intends to do just that. He will be walking along the
25 proposed route. I don't whether he'll be able to cover all
26 of it in the time that is available to him because of other

Mr. B. Klassen
Dr. Beanlands
Mr. L. Bouckhout

498.

1 duties that he has as well, but he will be looking at that
2 route on the ground to determine from sign, that is there
3 now, how much use is made of the area in the wintertime.

4 MR. CHAIRMAN: The Squanga Lake
5 area?

6 MR. KLASSEN: Yes.

7 MR. CHAIRMAN: Dr. Beanlands?

8 DR. BEANLANDS: I have a question
9 for Mr. Bouckhout from Foothills.

10 I am interested in the light of the
11 discussion that we've had tonight on the wildlife problems
12 and I'm not a wildlife biologist, but from a logistical
13 point of view, I'd be interested in the sequence of events
14 which you undertook in laying the proposed pipeline route.

15 It seems to me where you've
16 deviated from the road, you've run smack into wildlife
17 problems. Is this in essence, a post-mortem on engineering
18 route or was there some attempt to avoid wildlife difficulties?
19 I realize there are constraints from an engineering point of
20 view. You can't put a pipeline in certain country, but if I
21 had heard to believe that there was an awful lot of thought
22 put into the routing of the pipeline, where some of these
23 ^{wildlife} obvious/problems seem to be a connective way of deviating it
24 from the highway.

25 MR. BOUCKHOUT: Dr. Beanlands,
26 where we deviate from the Alaska Highway route, in fact, is

1 in those areas where the Alaska Highway route for one reason
2 or another, happens to take a particular swing away from a
3 relatively straight line route.

4 This is applicable to the --
5 certainly the Squanga Lake area and so on.

6 DR. BEANLANDS: Would you agree
7 that you laid the line out and then looked at the wildlife
8 impacts?

9 MR. BOUCKHOUT: Sir, the way a
10 line is defined is that a feasible general routing, and I
11 mean by general routing, not a very site-specific routing
12 because that isn't even on the paper now.

13 A general routing is defined on
14 the basis of engineering feasibility and suitability.
15 Certainly, the flexibility -- there is flexibility inherent
16 in that kind of a route which is defined in that manner. Our
17 job then becomes to evaluate the route on the basis of
18 environmental concerns in the various disciplines to go
19 through the process of evaluating it, one discipline against
20 the other where there are conflicting circumstances and draw
21 our judgments on that basis.

22 As we've discussed before, in some
23 cases, route realignment is necessary to adequately confront
24 the environmental concerns and considerations. We've dis-
25 cussed many of those here today and in previous days. In
26 many other cases, route relocation is not necessary, that

Mr. L. Bouckhout
Dr. Beanlands
Mr. B. Trevor

1 there are other means of reacting to it.

2 That's in essence, the way we
3 have approached the environmental consideration of this
4 particular route.

5 DR. BEANLANDS: The only point
6 I was trying to make is that logically, one wouldn't run
7 a pipeline over bad engineering terrain. By the same logic,
8 one wouldn't obviously run a pipeline through prime wildlife
9 habitat.

10 MR. BOUCKHOUT: Logically, if
11 there were other reasonable alternatives available, that's
12 correct. That's the purpose for assessing it at this time.
13 We've also spoken about the geotechnically related studies
14 that are also necessary to evaluate this route and the
15 engineering studies. We by no means have unnecessarily, a
16 final engineering or geotechnical route any more than other
17 environmental or environmental considerations. It's being
18 evaluated now.

19 You simply have to have something
20 to evaluate, you know, you have to restrict your sphere of
21 consideration.

22 DR. BEANLANDS: Thank you.

23 MR. TREVOR: Just supplementary
24 to that, Mr. Bouckhout, it appears from the evidence given
25 before us in the past couple of days, that the deviations
26 that might be required on geotechnical grounds are somewhat

Mr. B. Trevor
Mr. L. Bouckhout

1 minor compared to the deviations that might be required for
2 the protection of the wildlife.

3 Would you say that that was
4 generally so?

5 MR. BOUCKHOUT: It appears, Mr.
6 Trevor, that the nature of the terrain is such that from
7 what we know of it now, accommodation to potential geo-
8 technical problems should not require in general terms, any
9 major deviations.

10 It's a matter of opinion as to
11 whether the -- as you term them -- wildlife problems do
12 require in fact, those major deviations.

13 MR. TREVOR: I deliberately used
14 the word may so that if we're looking at the M'Clintock
15 River-Squanga Lake area, the essence of your proposed de-
16 routing was essentially to produce a straight line on the
17 map.

18 MR. BOUCKHOUT: That deviation
19 originally was made in order to shorten the pipeline as much
20 as possible, that's correct. It's my understanding as well,
21 that the terrain in the vicinity of the Alaska Highway in
22 that area is far less suitable for pipeline construction.

23 MR. TREVOR: Thank you.

24 MR. CHAIRMAN: Would you like to make
25 a statement based on the brief, Mr. Bouckhout?

26 MR. BOUCKHOUT: Just a very brief

1 comment that, as we have to a degree, already discussed,
2 based on prior pipeline related studies in other northern
3 areas and based on the context of what a pipeline project
4 really is, our own biological consultants being professional
5 biologists themselves, have in fact, indicated to us that
6 there is sufficient time to complete the studies necessary.

7 We have not said and have never
8 said that the studies are completed and that we have
9 sufficient data at this time for final design. It's a matter
10 of understanding how the project builds up, how it's phased.
11 We have been undertaking field studies since September of
12 last year to gain the data necessary to warrant this final
13 design.

14 I think I've indicated previous,
15 that there is flexibility inherent in the project, both in
16 timing and location. We are utilizing that flexibility as
17 we gain more data toward final design and I just close with
18 saying, our biologists feel that given the current construc-
19 tion schedule, given the phasing of the construction which is
20 less than half to be constructed in 1979, that there is
21 sufficient time to adequately plan for environmental matters
22 with this project.

23 MR. CHAIRMAN: Have you in fact,
24 considered carrying out the studies that are proposed in the
25 brief or have you gotten that far in your planning?

26 MR. BOUCKHOUT: Some of these

1 studies and I cannot recall all of them, some of them for
2 instance, the studies with respect to raptors, are ongoing
3 now. Involved in the summer bird program is a consideration
4 of the Duke Meadows area and with respect to sharp-tailed
5 grouse, the sharp-tailed grouse leks in my understanding, in
6 my familiarity with leks and I haven't certainly not spent
7 a lot of time on leks, but I have been on leks and they're
8 quite identifiable. They're not the kind of thing, given the
9 activity of sharp-tailed grouse on lek, in other words you
10 can identify a lek.

11 That's a consideration. As I say,
12 I don't recall all the studies. We have ongoing ungulant
13 surveys; another one has just been completed. These are
14 scheduled monthly from now on through the balance of summer
15 and fall. On the current program, the summer bird studies
16 are ongoing now which are including consideration of raptor
17 nest sites; there will be fur-bearer work -- fur-
18 bearer work in particular, scheduled for the fall is now
19 scheduled for the fall and approved and budgeted for.

20 Those are the ones I can recall
21 immediately.

22 MR. CHAIRMAN: Are these proposed
23 studies available to us in any detail? Did we receive --

24 MR. BOUCKHOUT: What you have so
25 far, Dr. Hill, is our completion reports on the winter
26 ungulant surveys; on the winter fisheries work. You have only

Mr. L. Bouckhout
Ms. A. Reed
Mr. B. Klassen

1 an interim report on the spring waterfowl work --

2 MR. CHAIRMAN: I meant the
3 proposed work that you were talking about, the work where
4 the budget had been approved and so on.

5 MR. BOUCKHOUT: It's ongoing
6 now. I believe you requested of me earlier, a description
7 of those programs that are ongoing and what time they might
8 be completed. That would be provided to you.

9 MR. CHAIRMAN: That's my question,
10 right.

11 Are there questions from the
12 floor -- comments from the floor? Yes please.

13 MS. REED: I'm Allison Reed.
14 I was wondering, Mr. Klassen, if you could give us an idea
15 of what size staff you think would be necessary to adequately
16 do the studies before the construction and then manage the
17 wildlife management, during and after management -- after
18 construction.

19 MR. KLASSEN: No, I'm afraid not.
20 There were research proposals written for these various
21 problems, some of which we're looking at now and many years
22 were outlined on these research proposals, but some of the
23 problems that I've mentioned here now, some of the long term
24 caribou research is not one of the proposals that was
25 mentioned or that was drafted earlier. That would require
26 more manpower. I can't give you a figure but possibly by

Mr. B. Klassen
Ms. A. Reed

495 .

1 July, we might be able to.

2 I'm not sure whether we have that
3 on our list as one of the things that we would address in
4 July, but I'll put it on and we'll see what we can do.

5 MS. REED: I'm just sort of
6 interested because I think it was stated at one point
7 earlier that they didn't feel that any great increase in
8 staff -- in the Wildlife Branch -- would be necessary because
9 of the pipeline.

10 I was wondering if you would agree
11 with that.

12 MR. KLASSEN: Well, with respect
13 only to research programs, I don't know, but in Alaska, the
14 biological staff that was hired to do the surveillance
15 monitoring during construction of the pipeline, I believe
16 that pipeline was some eight hundred miles long, the number
17 of biologists employed on that surveillance team was I believe,
18 twenty-six.

19 MS. REED: Did they feel that
20 was an adequate number. I mean, of course, you don't really
21 know then, how many would be needed for the --

22 MR. KLASSEN: No, they worked --
23 I know that they worked seven days a week, but whether that
24 was adequate to cover the workload, I don't know.

25 MS. REED: Thank you.

26 MR. CHAIRMAN: Mr. Williams?

Ms. J. Kehoe ---
Mr. L. Bouckhout
Mr. M. Williams

1 MS. KEHOE: Just a short question.
2 Mr. Bouckhout, have you begun environmental studies on the
3 Dempster route yet?

4 MR. BOUCKHOUT: I suppose ma'am,
5 it depends upon your definition of environmental studies.

6 We are not currently undertaking
7 any detailed studies on the route. We are, given the terms
8 of reference of this Panel, undertaking to evaluate the
9 routes in the context of discussing it in July. We are
10 collecting what information there is available and having
11 various biologists in their various disciplines again,
12 evaluating the routes in whatever context they are able to
13 do, so, in the upcoming three or four weeks.

14 There have been a number -- I
15 shouldn't say a number -- there have been some studies under-
16 taken that were applicable to the Dempster Highway route.
17 For instance, the distribution movement studies and so on,
18 with respect to the Porcupine caribou herd. These are
19 applicable to the route because they did take into consider-
20 ation, winter range, migration routes, summer range and so on.
21 So those are applicable and these have been undertaken over
22 the past I believe, six or seven years.

23 MR. WILLIAMS: I have a couple
24 of questions. You state in your brief that we have strong
25 fears for the continued utilization of that portion of the
26 Porcupine caribou herds winter range to the east of the

Mr. M. Williams

Mr. B. Klassen

1 Dempster Highway if the road is finished. I was wondering
2 if you'd -- if the Game Branch had made those fears known
3 to anybody.

4 MR. KLASSEN: I believe that
5 Dr. Huffs(?) expressed those fears at a symposium held in
6 Whitehorse here last winter on the Dempster Highway. I
7 wasn't present at the symposium, but I saw a copy of the
8 paper and he expressed that particular fear.

9 MR. WILLIAMS: The Game Branch
10 participates in the Land Use Planning Committee, does it not?

11 MR. KLASSEN: Yes it does. We
12 have one member on the committee.

13 MR. WILLIAMS: The Land Use
14 Planning Committee is in charge of issuing licences for
15 construction of the Dempster Highway?

16 MR. KLASSEN: So I understand,
17 yes.

18 MR. WILLIAMS: Has the Game Branch
19 expressed its fears to the Land Use Planning Committee, do
20 you know?

21 MR. KLASSEN: I don't know
22 specifically. I have talked to Dave Mossop who sits on the
23 Land Use Committee for the Game Branch and I believe that he
24 has made that particular fear known to the Land Use Committee,
25 but specifically what he's said or what input he has had, I
26 don't know.

Mr. M. Williams
Mr. B. Klassen
Mr. L. Bouckhout

498.

1 MR. WILLIAMS: I was wondering
2 if you had any comment on the -- we've read some of the
3 Game Branch comments on Foothills' original Environmental
4 Impact Statement. I was wondering if you had any comments on
5 their winter studies that have been published on the adequacy
6 or the information contained in them.

7 MR. KLASSEN: I read their winter
8 ungulate study and we have a copy of their fisheries study
9 which of course, is not within terms of reference of the
10 Game Branch, so I didn't that one, but the winter ungulate
11 study, we have a copy of and I've read it. There was the one
12 error in it that Mr. Chambers brought to our attention here.

13 I don't think that the studies that
14 were done were sufficient on which to base a decision and
15 as a matter of fact, not that precise statement, is made in
16 that report, but the report does say that further studies
17 are recommended.

18 MR. BOUCKHOUT: I have a comment
19 on that. It was never intended that that was the only winter
20 survey that would ever be done. That was just a first phase
21 of subsequent studies which would also be done as follow-up
22 to that.

23 MR. KLASSEN: Yeah, I didn't mean
24 to imply either that I thought that was the only one, but
25 that more studies were recommended in that report.

26 MR. BOUCKHOUT: That's correct.

1 MR. WILLIAMS: What length of
2 time then would you expect for say, winter ungulate studies.
3 What is the length of time and depth of study would you see
4 as being adequate?

5 MR. KLASSEN: In our brief, we
6 recommend a minimum of two years. One reason being that if
7 during one of those years, we experience the mild winter
8 that we had last year, the information isn't necessarily
9 indicative of the typical behaviour of those animals.

10 There will be people on our Panel
11 in July who will be able to comment on that more detailed
12 than I am as to why that length of time is required, but for
13 caribou, we say that we require a minimum of two years.

14 MR. WILLIAMS: Okay, thank you.
15 One other question was in regard to Arctic Gas' presentation
16 to the Board. Had you read the presentation at all?

17 MR. KLASSEN: No, I was here when
18 the statement was read into the record but I haven't gone
19 through the -- I have a copy of their statement but I haven't
20 read the whole thing.

21 MR. WILLIAMS: I think many of
22 the conclusions that they draw are similar to, and I was
23 wondering if you could just comment on them and just see if
24 they are the same.

25 Number one, many specific environ-
26 mental concerns have not been solved or even identified.

Mr. B. Klassen
Mr. M. Williams

1 MR. KLASSEN: Well certainly,
2 they haven't been solved and all of them haven't been
3 identified. To that extent, I can agree with that statement.

4 MR. WILLIAMS: Okay. Much
5 environmental research is required to overcome the present
6 paucity of scientific data.

7 MR. KLASSEN: Could you read
8 that again? I didn't understand the first part.

9 MR. WILLIAMS: Much environmental
10 research is required to overcome the present paucity of
11 scientific data.

12 MR. KLASSEN: Yes, certainly.
13 We have to have more information.

14 MR. WILLIAMS: A minimum two year
15 environmental research program is required before adequate
16 design construction planning and capital costs analyses are
17 performed.

18 MR. KLASSEN: Well, we say that
19 we need in most cases, two and in some, three years of studies
20 and according to what the other gentleman -- the engineer --
21 said about design, I guess that would have to be done prior
22 to design.

23 MR. WILLIAMS: Then the major
24 point that Arctic Gas argues is the validity of the corridor
25 concept, a minimum of environmental impact by means of con-
26 centrating development as applied to the Alaska Highway route

Mr. B. Klassen
Mr. M. Williams

1 is unproven. Would you like to comment on it?

2 MR. KLASSEN: I don't know
3 whether it's proven or not. I know that some concern has been
4 expressed by the person who is doing the fur-bearer research
5 for us, that if we wind up with a number of slices of land
6 that is left as it is now and then a pipeline right-of-way
7 or a highway or old rights-of-way, the cumulative effect may
8 be such that animals such as the pine marten which I mentioned
9 earlier, may not cross that area.

10 What the total effect of that
11 would be, I can't say and I don't know whether there is
12 actual data on which to rely, to express an opinion on that.

13 MR. WILLIAMS: Foothills also
14 talks extensively about synergistic effects. I wonder if you
15 had any comment on that. I'm sorry, not Foothills -- sorry,
16 Arctic Gas in their presentation talked about synergistic
17 effects.

18 MR. KLASSEN: Yeah, I didn't
19 know that Foothills had commented on it.

20 No, I'd rather not comment on that
21 now because I'm not entirely sure what is meant by Dr.
22 Banfield when he makes the statement, so I think I'd like to
23 leave that one until July if that's okay.

24 MR. WILLIAMS: Okay, thank you.

25 MR. CHAIRMAN: Any other comments
26 -- questions from the floor?

Mr. B. Lister
Mr. L. Bouckhout
Mr. C. Wykes

1 Mr. Lister?

2 MR. LISTER: I'd like to follow
3 up with a question to Mr. Bouckhout and it follows Dr.
4 Beanlands' question concerning the environmental consider-
5 ations and route location. I took your answer to mean that
6 the alignment proposed at this stage was developed largely
7 before there was any input available of an environmental
8 nature. Would that be a fair statement?

9 MR. BOUCKHOUT: Yes, I think that
10 would be a fair statement.

11 MR. LISTER: Thank you.

12 MR. CHAIRMAN: Mr. Wykes?

13 MR. WYKES: Mr. Bouckhout, we
14 have heard a number of concerns expressed this week about
15 the already far too few game sanctuaries in the Yukon and
16 some recommendations that both game sanctuaries and proposed
17 IBP sites should not be traversed by a pipeline.

18 I was wondering if you knew
19 whether or not the enabling legislation under which both of
20 these parcels of lands are authorized, permit this type of
21 development to take place?

22 MR. BOUCKHOUT: Mr. Wykes, I'm
23 not aware of any enabling legislation with respect to IBP
24 sites to give them in fact; legal status.

25 It's my recollection that in fact,
26 they don't have legal status. With respect to game sanctuaries,

1 again it's my understanding that the objective of the game
2 sanctuary is to prohibit hunting and I believe it's to my
3 knowledge, only hunting that is prohibited. In fact, in
4 the Kluane Game Sanctuary, I understand that there are placer
5 mining claims and so on and so forth so that industrial
6 activities are not inherently excluded from game sanctuaries.

7 MR. WYKES: Thank you.

8 MR. KLASSEN: I'd like to make
9 a comment on that.

10 MR. CHAIRMAN: Certainly.

11 MR. KLASSEN: Mr. Bouckhout is
12 quite right. Game sanctuaries are enacted under the Yukon
13 Game Ordinance and as such, require enactment by the Legis-
14 lative Assembly here in the territory.

15 But the Federal Statutes of the
16 Yukon Placer Mining Act and the Yukon Courts Mining Act of
17 course, take precedent and so all that we can legislate --
18 the only protection that we can legislate for the wildlife
19 in a game sanctuary is that afforded them by prohibiting
20 hunting in the territory.

21 The Kluane Game Sanctuary does
22 have active placer mining going on in it and there are a
23 number of mines that have been active at one time or another,
24 that are within the sanctuary, so as I intimated in the brief,
25 the protection that's given animals in a wildlife sanctuary
26 is only from outright killing by human beings, not by dis-

Mr. L. Bouckhout
Mr. B. Lister

1 placement by those human beings.

2 MR. CHAIRMAN: For the record,
3 IBP is International Biological Program sites.

4 Okay, are there any other
5 questions or comments from anyone?

6 MR. BOUCKHOUT: I would just like
7 to make one brief comment on a question I believe Dr.
8 Beanlands' asked of Mr. Lister with respect to initial
9 definition of the route.

10 The initial definition of the
11 route was in fact, done via reconnaissance. This reconnaiss-
12 ance involved personnel from the engineering department and
13 from the environmental department as well, so that in that
14 respect, that is how the initial route was defined. Then from
15 that of course, utilizing topographic maps and subsequently
16 air photo interpretation and so on.

17 MR. CHAIRMAN: Mr. Lister?

18 MR. LISTER: I appreciate that
19 that's the way it was developed. It seems to me on reading
20 the material that Foothills has at hand, that if that material
21 had been compiled at that stage or at the stage that this
22 line was in fact decided upon, that some of the routings they
23 now have, they might have reconsidered and and may well have
24 not adopted. Is that a fair statement?

25 MR. BOUCKHOUT: That's a possibility,
26 Mr. Lister, subsequent to the definition of the original line

Mr. B. Lister
Mr. L. Bouckhout

505 .

1 in fact, the filing of the original line, we have in fact
2 made a change in the Pickhandle Lakes area for instance.
3 That was done strictly for environmental reasons.

4 The consideration of the Ibex
5 that we are now speaking of, is strictly for environmental
6 reasons, so these are some of the additional considerations.

7 MR. LISTER: Yeah, just one
8 further comment. That creates problems in that to some of
9 us it looks somewhat inconsistent to identify problems in
10 you know, one part of the report or the submission, but you
11 know, not to have a route that demonstrates some recognition
12 of those as in the Ibex Pass area. It seems to me there
13 are quite a few environmental concerns besides just sheep.

14 There is a campground that the
15 route goes through. There are trout spawning areas. It's a
16 recreational area near Whitehorse. There would seem to be
17 other logical routes that -- around Whitehorse that could
18 have been considered. It's just apparent that if environmen-
19 tal factors -- or these environmental factors that are
20 evident in the Atlas and in the text of the Environmental
21 Statement, were considered at that time, then they were not
22 given much weighting. But I'm not really trying to imply
23 that. What appears to me is that these activities were going
24 on simultaneously.

25 MR. BOUCKHOUT: Just a couple of
26 brief comments on your comments, Mr. Lister. For one, you

Mr. L. Bouckhout
Mr. R. Crum
Mr. B. Klassen

1 say there appear to be other logical alternatives on this
2 surface inspection. That may very well be true, but on more
3 detailed consideration, that may in fact not be true.

4 We've -- I think we've belaboured
5 the Ibex situation significantly and we have never tried to
6 hide the fact that we recognize that there are concerns there.
7 In fact, that's why we are considering what can be done
8 with those concerns. We have made that patently evident in
9 the Environmental Statement in the first place.

10 MR. CRUM: My name is Ross Crum.
11 Mr. Klassen, as you are aware, this route or this pipeline
12 proposal gains its credibility mainly by the existence of
13 the -- by virtue of the existence of the Alaska Highway.

14 Would you care to comment on
15 what you consider to be the width of a corridor adjacent to
16 the highway through which a pipeline should be built?

17 MR. KLASSEN: I was asked that
18 question once before and I can't give a number and say within
19 three hundred yards of the present highway is where the pipe-
20 line should go, because within that three hundred yards or
21 if I said within a mile of the highway is where the pipeline
22 should go, you can bet that within that three hundred yards
23 or a mile, is where we'd encounter peregrine falcon, aires,
24 or something else that we're particularly concerned about.

25 So, I would say that the best way
26 to attack the problem would be to have the engineer's propose

Mr. B. Klassen
Mr. R. Crum
Mr. L. Bouckhout

1 a line on the map based on their topographic maps or aerial
2 photographs and then before the process goes too much
3 further than that, then turn it over to the wildlife agencies
4 that are concerned or to the consulting companies and have
5 them have a look at the route and identify the problems the
6 way we're doing now. It almost seems the way we're doing
7 now, too late because of all the effort that's already been
8 done by the engineers.

9 I got so wound up I forgot where
10 I was going. So I don't feel that we can say within a
11 certain distance, but I think that we have to look at the
12 route very closely and then on the basis of our findings,
13 on the basis of our research, say that this is the distance
14 in this particular area where the pipeline should go.

15 MR. CRUM: Just one further
16 question to that. Would you agree with me, that given the
17 present state of information available, that the only thing
18 that one can safely say at this moment, is that the closer
19 to the highway the better?

20 MR. KLASSEN: Yes, I think that's
21 a safe generalization, especially given the two wide
22 divergences now and based on the information that we have,
23 yes.

24 MR. CHAIRMAN: Anyone else that
25 would like to make a comment or question? Mr. Bouckhout?

26 MR. BOUCKHOUT: Just one very

1 brief comment on Mr. Klassen's last comment. I recall Mr.
2 Klassen saying something about the amount of engineering
3 work that's already being done and perhaps intimating that
4 when the engineering design is finalized and has cast the
5 route in very concrete terms, in fact, there is considerable
6 engineering work that is yet to be done. We've already
7 discussed the geotechnical work and so on.

8 Again, harken back to the fact
9 that there is considerable flexibility yet inherent in this
10 route. It is not by any means, a final design route.

11 MR. KLASSEN: I'm glad to hear
12 that.

13 MR. CHAIRMAN: Any other questions
14 or comments? Would you like to conclude with a sum up, Mr.
15 Klassen?

16 MR. KLASSEN: I don't think that
17 the questions or comments that have been made after I
18 presented my brief have raised any issues that weren't
19 addressed at least to some extent by my brief.

20 In July, the hearings are only I
21 think about three weeks away again, but by July, we hope to
22 have very detailed information, as detailed as is possible
23 for us to compile in that length of time to present to this
24 Panel. I've made notes of some of the questions that were
25 raised and some of them fall within those areas that we were
26 going to address anyway and so we'll pay particular attention

1 to them to satisfy the people that ask them.

2 There will be specific recommen-
3 dations made for specific problems that we identify, much
4 as we've already made specific recommendations in certain
5 areas such as Sheep Mountain and I think that's all I have
6 to say now.

7 MR. CHAIRMAN: Since we probably
8 have some time, is there anyone in the audience who would
9 like to address the Panel on any subject to do with the
10 environmental assessment of this pipeline, not necessarily
11 the topics that were raised tonight in the briefs?

12 MR. CRUM: Dr. Hill, we've become
13 aware of a great number of people who have connected either
14 directly or indirectly a supporting staff for this Inquiry
15 in doing various studies and related logistics to those
16 studies.

17 I wonder if you just might comment
18 upon generally, the process that you are going through and
19 the nature of the input from these various supporting groups
20 that are working with you and whether or not there will be
21 an opportunity for interest groups and other interested
22 persons to be made aware of that information, prior to you
23 making a report.

24 MR. CHAIRMAN: Yes certainly.
25 When we started this round of hearings on Monday, I explained
26 the support staff setup to the Panel and identified some of

1 the work that was going on which will lead to information
2 coming in front of us.

3 I could only identify some of the
4 activity of course, because we're not aware of all the
5 research that's going on which may result in recommendations
6 to us. Our Panel has a small support staff which you see
7 on our left, who are experts in individual areas. This
8 support staff was set up originally under our original terms
9 of reference.

10 Also, at the time the Panel was
11 set up, we requested Indian and Northern Affairs to finance
12 a study -- comparison study -- between the Mackenzie Valley
13 route and the Alaska Highway route with the objective of
14 learning as much as we could from the testimony on the
15 Mackenzie Valley route that was put in front of Justice
16 Berger and the National Energy Board.

17 That analysis as I understand it,
18 is underway and we should see the results of that in July.
19 Also, after we were asked to hear information on the
20 alternative routes within the Yukon, including the Dempster
21 -- possible Dempster link -- we felt that a group of experts
22 should be brought together at arm's length from us, in order
23 to analyze as much as possible within the time limitations,
24 the Dempster link and the alternatives and that group is
25 the Envirocon Group. It's working because we requested the
26 studies, but they're working at arm's length from the Panel.

Mr. M. Williams

1 They have really just begun their work and they should be
2 -- well, they must be finished in time to offer us advice
3 in July.

4 Also, there are a number of
5 agencies within the Federal Government, Department of
6 Fisheries and Environment, and Energy Mines and Resources
7 and you heard of the Game Branch of the Yukon Territorial
8 Government tonight, who are analyzing the pipeline question
9 in the Yukon as part of baseline information studies. These
10 agencies we've asked to structure their field programs in
11 such a way as to advise us on their findings as they become
12 available.

13 All of these studies, we anticipate
14 will give us as good an insight as possible, along with the
15 other information that's coming from Foothills; Arctic Gas,
16 the Alaska Highway Panel from Winnipeg, and others. We as a
17 Panel, will simply hear all the information that is put in
18 front of us.

19 The only staff that we really
20 have any control over in terms of directing them on a day-
21 to-day basis is the staff you see on my left. As far as
22 the public talking to these groups, I certainly have no
23 objection and if you wish, I can identify the team leaders.

24 I'm not sure I know all their
25 names now but I can certainly find out.

26 MR. WILLIAMS: Does the Panel have

Mr. G. Bethel
Mr. L. Bouckhout

512

1 the authority to call witnesses or independent experts who
2 aren't associated with the various of groups that you're
3 talking about? I'm thinking specifically of perhaps
4 biologists who've been working on the Porcupine caribou
5 herd or working on herds in Alaska who are perhaps U.S.
6 based and aren't readily available to any of the groups.

7 MR. CHAIRMAN: Certainly, we can
8 ask anyone to advise us. We don't have the power of
9 subpoena to bring them in front of us. If they're in the
10 U.S., that probably wouldn't do us much good anyway, but
11 certainly, if you'd like to advise us on the particular
12 experts that we should hear, we'd be pleased to contact
13 them.

14 Anymore comments?

15 MR. BETHEL: Yes, I have a
16 comment to make to Foothills. It's related to emergency
17 situations because in construction, things like fires can
18 occur, septic tanks at campsites can malfunction, fuel
19 storage base can break up and I was wondering what kind of
20 details they have for dealing with these things.

21 MR. CHAIRMAN: Mr. Bouckhout?

22 MR. BOUCKHOUT: What you're
23 basically describing are contingency types of situations.
24 We have to a limited degree, built into the existent
25 environmental protection measures and I think this is also
26 the case with many of the regulations and guidelines and so

Mr. L. Bouckhout

1 on that are currently applicable to this kind of project.

2 Safeguards for contingency
3 events for instance, obviously you mentioned fire, you
4 mentioned potential for fuel spills and so on. In terms
5 of an effective contingency plan, the priorities are pre-
6 vention and subsequent to that, if an event occurs, given
7 your measures of prevention, then an ability to react to
8 the situation as quickly as possible, We haven't detailed
9 contingency plans for many of the eventualities, although
10 we do recognize that this is a necessary element in the
11 final project planning and final project implementation.

12 In the prevention sphere, I might
13 mention elements such as dyking of major fuel storage areas
14 is inherent in the system, in the plan. These kinds of
15 things in terms of prevention, in terms of the other elements
16 of a contingency plan - they have not yet been developed
17 although they will be developed in due course prior to
18 construction.

19 MR. CHAIRMAN: Any other questions
20 or comments? Well, I'll adjourn the meeting then. The
21 Panel will meet again on Friday at 10:00 o'clock.

22 (PROCEEDINGS ADJOURNED).
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Environmental Assessment Review

Panel: June 15, 1977

DATE	REMARKS

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Vol 3

CA1 V. 4
EP182
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GOVT PUBL

ENVIRONMENTAL ASSESSMENT REVIEW PANEL

IN THE MATTER OF AN APPLICATION BY FOOTHILLS PIPE
LINES (YUKON) LTD. TO THE MINISTER OF INDIAN AFFAIRS
AND NORTHERN DEVELOPMENT FOR A GRANT OF THOSE
INTERESTS IN THOSE AREAS OF TERRITORIAL LANDS IN THE
YUKON TERRITORY AS MAY BE NECESSARY FOR THE CONSTRUC-
TION AND OPERATION OF THE SAID NATURAL GAS PIPELINE
AND THE WORKS AND FACILITIES CONNECTED THEREWITH AND
INCIDENTAL THERETO,

AND

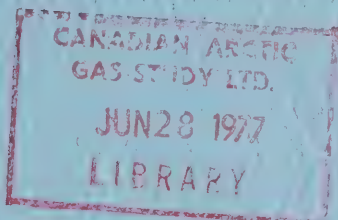
IN THE MATTER OF A PANEL TO REVIEW THE ENVIRONMENTAL
ISSUES RELATED TO THE PROPOSED ALASKA HIGHWAY GAS
PIPELINE.

THE CHAIRMAN: DR. H.M. HILL

MEMBERS: DR. O. HUGHES
MR. L. CHAMBERS
MR. B.J. TREVOR
MR. C. WYKES
DR. D. LACATE

PROCEEDINGS

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Mr. J. Bouckhout
Mr. H. Romaine

514

Whitehorse, Yukon Territory

June 17th, 1977

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: Good morning. Do you have any documents to present this morning Mr. Bouckhout?

MR. BOUCKHOUT: Yes, Dr. Hill, in response to a request from the panel, I have five copies of the document entitled: "Mackenzie Valley Pipeline Hearing - Written Argument of Foothills Pipe Lines Limited and Foothills Pipe Lines (Yukon) Limited" for you today.

MR. CHAIRMAN: Thank you very much.

This morning we have the Department of Fisheries and Environment, represented by Mr. Romaine. Would you care to give your brief now, Mr. Romaine?

MR. ROMAINE: Thank you, Mr. Chairman. Our document is basically in two parts. We would like to address first the submission of Foothills and the route; and secondly, we will be dealing with some concerns that we have tangibly identified for the alternative routes as well.

As an introduction, our understanding of this brief is that we are to provide a preliminary review of the environmental concerns and that further information obtained by our Department will be supplied to the Environmental Assessment Panel during the more formal presentations, which are scheduled for July.

In addition, at that time, our Department will have experts available to comment on the more specific aspects than will be dealt with in this brief. I am representing the Department in this case. I will certainly attempt to answer any questions, but if there are specific questions related to perhaps Fisheries or any of the other disciplines, I will have to refer those back to the more formal sessions in July.

Finally, as an introduction, in recognition of the responsibilities for resources between various departments and governments such as our own Department, Energy, Mines and Resources, Department of Indian and Northern Affairs and the Yukon Territorial Government, we'll try to restrict our concerns to those that are most appropriately covered by our department, but we probably will be making references to areas that are also under other agencies concerns, and I think that that's understandable because of the overlap between environmental issues, and it's very difficult to draw lines between various disciplines.

To start off with then on our Environmental Concerns with the Foothills Pipeline Application, first of all on Hydrology. One of the concerns we have is with Drainage Disruption, particularly in permafrost terrain during construction and maintenance of the pipeline. The numerous small, high energy streams which have actively moving beds of silt, volcanic ash, gravel and boulders,

particularly that descend from the Kluane Range and empty into Kluane Lake are considered to be a serious potential problem. The channels are contained in the mountains by channel walls, but on the fans they are unconstrained and are free to shift their courses. During floods the bed material chokes the channel, causing the streams to abruptly flow out of the channel and to find a new one elsewhere, where it scours down a similar channel. Highway maintenance personnel are in a continuous battle with these streams and this is a question, therefore, that we wish to raise. That is what happens when excavation traverses the general drainage pattern of these alluvial fans, underlain with permafrost? Will it become a channel for surface and ground water flow?

One of the impacts, of course, from these, is that they carry a high sediment load during floods, and the initial pipeline trenching and ongoing maintenance activity, such as re-trenching, in this unstable area could result in increased loads of silt entering Kluane Lake.

The proponent recognizes the problems of natural drainage and the changes by construction by the proposed pipeline and ancillary structures. However, this statement is devoid of site-specific information and fails to comment on siltation, its effect on aquatic ecology and proposed measures to mitigate negative impacts.

It is suggested that the location

of the pipeline along the foothills above the head of the alluvial fans be considered as a preventative action; the pipeline should be buried below scour depth over the entire reach from about Mile 115 to 145.

No data is available on the natural sediment transport into Kluane Lake on which to extrapolate the increases that would result from pipeline construction and maintenance. The development of a sediment program for study of siltation on the west shore of Kluane Lake would be necessary to fill this gap.

Also, more detailed information on the location, discontinuity and characteristics of permafrost is required as it is one of the prime parameters in the study of mass movement of material within the alluvial fans.

The second major concern we have is with river crossings, and associated bank and channel bed stability.

Major river crossings, particularly in the permafrost areas west of Whitehorse, require special attention with respect to bank stability and scour. Thawing of river banks at construction sites may be serious on the White, Donjek, Duke and Slims Rivers, and in particular on the first two. In the fine soils that are prevalent at these crossings, which are aggravated by permafrost or ground-ice, the stability of channel banks is partly dependent upon the

maintenance of frozen ground near the channel banks.

Examples of major slumps along the river banks have been observed to date.

Another problem is the degradation of the channel bed. The silt, sand and gravel are moved along the river beds in dune and sheet transport. During this activity a seasonal scour can occur, the extent of which can be determined best by observation. Under ice cover, an increase in discharge is partly met by ice heaving and partly by an increase in stream velocity, thus producing increases in bed scour potential. During a flood discharge, the stream bed may alternately degrade and aggrade with rise and fall of discharges. Only a thorough morphological study of these rivers will clarify the situation regarding the depth at which the pipeline should be buried.

Within the White, Donjek and Slims drainage basin there are known to be some forty lakes which are dammed by glaciers. Glacier dammed lakes may suddenly drain, causing floods of catastrophic proportions. The likelihood of sudden, unexpected release of lake waters is increased greatly when the lakes are found in association with surging glaciers which can change their configuration very rapidly. Such floods could endanger the integrity of the pipeline.

The pipeline route parallels Teslin Lake for about thirty-five miles and about twenty-five

tributaries are crossed. Morley River and Morley Lake are paralleled for another twenty miles and nine of their tributaries are crossed. The Smart and the Swift River system is paralleled for a further thirty-two miles and at least twelve of its tributaries are crossed. No known streamflow data are available on these tributaries. Under natural conditions these streams appear to be running relatively free of suspended sediments. However, because of the silt terraces and sharply incised channels, construction activity will inevitably cause serious stream and lakeshore siltation. For assessment of this problem's potential, an estimate of range of discharge of several inflow streams is needed. In addition, an estimate of sediment concentration during summer storms would be valuable.

In the Liard River Basin there is no evidence of lacustrine sediments or any severe hydrologic problems. The relic morains in the Rancheria system appear stable; however, benches seem to be poorly drained and could represent concentrations of fine materials subject to degradation with disturbance. On the second Rancheria River crossing, the switching of the thalweg from left bank above bridge to right bank around mid-channel shoals below, is an indication of possible channel stability problems and that care is required in restoration of regime during construction. For estimation of the potential of these concerns, as above, an estimate of range of discharge

of several streams in the area is warranted. Currently there is no stream-flow stations on the tributaries in the Liard River drainage basin.

In terms of impact, both the White and Donjek Rivers have steep banks in fine-grained soils and erosion could cause serious stream siltation. However, both rivers already carry very heavy sediment loads. The White River is noted as a fish migration route downstream of the proposed pipeline crossing and upstream of the proposed crossing is a site considered to be acceptable for spawning. Physical disruption and its interference with fish movements during proposed construction and maintenance appears to be one of the main potential effects on the environment.

A third category of other hydrological concerns, studies on the water quality of thirty-six Alaska Arctic and Sub-Arctic rivers between 1969 and 1972 identified a severe winter dissolved oxygen depression phenomenon in many rivers. The trend observed in many rivers was that the dissolved oxygen depletion usually became more severe when proceeding from the headwaters toward the mouth.

The Yukon River was found to contain, for example 10.5 milligrams, which is 73 per cent saturation, dissolved oxygen at the Canadian Border, but only 1.9 milligrams, or 13 per cent saturation near the mouth in Alaska. Since the White, Teslin, and Takhini River drainage basin tributary crossings could each contribute to an increased

deposition of organic material in the Yukon River Basin, the concern over a further depression of dissolved oxygen in downstream reaches of the Yukon is warranted.

It is not known what happens when a corridor of impervious material, whether permafrost or hardpan, is torn out, a pipe laid and backfilled with what may no longer be an impervious seal. For instance, when the excavation line follows, longitudinally, the general drainage the pattern of a basin, it will become another channel for surface and ground water which will, in effect, drain or reduce the water levels in their natural confines. This is a question of considerable importance in terms of water quality since there does not appear to be sufficient data regarding such intrusions, nor is there adequate permafrost information available for the region.

Many swampy areas will have to be temporarily drained to bury the pipeline. Muskegs occur in depressions and flat areas and most often consist of a tightly interwoven network affecting large areas. The drainage of such areas is of major concern since these waters have low pH and high organic matter content. The Teslin Lake area and the Haines Road seemed most likely to be affected by this problem.

The excavation of a deep trench might affect the groundwater regime over extensive areas, disturbing both the vegetation and river regimes. The

occurrence of potential aquifers should be examined for this reason. Should the proposed route cross the Yukon River upstream of Whitehorse at Marsh Lake, adequate measures should be implemented to protect this waterway from the introduction of contaminants during construction and operation since the system feeds into Schwatka Lake, a water supply for the City of Whitehorse.

In the vicinity of Quill Creek, west of Kluane Lake, is an abandoned or discontinued mining operation (that's Hudson Bay Smelting), where the proposed pipeline runs immediately adjacent to the old tailings pond. The proponent should take adequate measures to ensure the ground water in the vicinity are not disturbed so as to tap the pollutants underlying this deposit.

In the proponent's submission, no mention is made of the potential hazards to the ground water regime. While this concern is minimal in the northwest section of the Foothills route, it is nevertheless of potential importance near Whitehorse. Also, there is no acknowledgment of hazard to surface waters through draining of swampy areas or trenching a corridor of impervious material.

Finally, reference is made to placer activities in Carlick and Burwash Creeks but no mention of old mine tailings as a potential source of water pollution is made. Attention should be drawn to the occurrence of such tailings so that these areas can be avoided in the route

selection.

The second category deals with terrain.

Number one is permafrost. The southern limit of widespread discontinuous permafrost passes through Destruction Bay which is at approximately milepost 125 of the pipeline. The permafrost in this area is discontinuous but widespread with some permanently frozen soils containing massive ice inclusions. The most sensitive terrain is in this section as the surficial soils are mainly peat, high erodable volcanic ash, fine sands and silts.

Permafrost throughout the balance of the pipeline is more discontinuous and probably is present less than 30 per cent of the distance between milepost 125 to 215 and from 11 to 15 per cent over the balance of the route.

Special precautions to retain the permafrost within the area of the pipeline trench by chilling the gas at or below zero degrees Centigrade is only proposed for the first 40.8 miles. At mileage 40.8 the gas will be heated and maintained at a temperature of between 15 to 27 degrees Centigrade throughout the balance of the pipeline route in the Yukon. Thus, operations of the proposed warm pipeline will cause significant changes to the permafrost. In that portion where chilled gas will be piped,

some permafrost degradation prior to activation of the pipeline will occur.

Further permafrost degradation can also be anticipated when the pipeline is abandoned and areas previously frozen by the cold pipeline thaw and settle.

In the warm pipeline section and particularly in the areas where the soil is ice-rich, permafrost degradation could lead to a number of problems such as ground settlement, diverted drainage, slope failures and erosion. From an environmental standpoint, the major impact would be on established surface water runoff sources and possibly ground water sources if the pipeline trench acts as a trench drain. There will be a need to protect adjacent landforms from erosion and to protect existing streams from increased siltation particularly in areas which would have an impact on fish and domestic water supplies.

The second concern is granular materials. Foothills has estimated that 2.1 million cubic yards of granular material will be required for backfill, surface gravel on sites and roads and concrete aggregate. The estimated amount of granular material required will in all probability be exceeded. If this is the case, then new borrow areas will have to be developed along with the necessary access haul roads. This concern, that is the inadequate estimate, is based on the fact that:

(a) No allowances have been made

for rip-rap and granular blankets which will probably be required for bank stabilization at river crossings.

(b) If the pipeline is laid on a ground pad and covered with a granular borrow at fault zones, this again could increase requirements for granular materials considerably.

(c) It is questioned if adequate allowance has been made for the amount of rip-rap and granular material required for toe embankments and slope stabilization to control earth movement on the steeper slopes crossed by the pipeline.

In addition, there is a concern that demands for additional granular resources of the region will arise due to the Shakwak project, or the Alaska Highway repaving program.

The methods of dealing with overburden materials in the borrow pit areas and the disposal of fine-grained; high-ice content materials from trench excavation have not been discussed.

These materials, if improperly dealt with, could have a considerable impact on the siltation of adjacent streams well beyond the initial construction period.

The third category is vegetation. We have identified a number of issues at this stage in a tentative way, that may or may not have significant environmental concerns, and these will have to be substantiated

or refuted by further information.

Number one. The deviation of the proposed pipeline route from the Alaska Highway will mean traversing currently undisturbed land. This in itself will create a concern and every effort should be made to stay as close to the highway right-of-way as possible. The fact that the highway offers all-weather access for construction and maintenance, plus the minimization of the need to create disturbances in pristine areas should rank high in the site selection of such a pipeline.

(2) There will be disruption of drainage patterns along the pipeline route, which will result in changes in ground and surface water regimes and subsequent vegetation changes which may lead to the elimination of significant tracks of forest, loss of merchantable timber, land and mudslides, slumping and thermokarst which could also result in threats to the integrity of the pipeline itself. The results of maintenance and repair activities may add additional impacts beyond that of initial construction of the pipeline. To protect against probable drainage problems, areas where these are likely to occur should be identified.

(3) The pipeline corridor will maintain its own unique environment for decades and should therefore be considered in the context of future land uses in the area.

(4) Direct vegetation loss along the pipeline right-of-way, at compressor station sites, work camp locations and borrow areas will produce an aesthetically displeasing effect. As well, exposed river banks, hillsides and bared slopes will be subjected to sheet and gully erosion, and thermokarst slumping in permafrost areas. The above may result in potential danger to the integrity of the line itself with subsequent maintenance and repair activities have the potential for further damage to the environment.

(5) The risk of forest and grass fires is high during clearing and construction in the Yukon and prairie areas. The immediate danger from this is the destruction of timber, vegetation, and some wildlife followed by the erosion of soil from areas exposed by the burn. In the grazing areas, the danger from the fire itself is similar, but a further underlying problem created by fires is the removal of forage, which might place a heavy economic burden on domestic livestock operations.

(6) There is the possibility of plant community destruction from spills of sewage or other toxic or hazardous materials along the right-of-way of highways, access roads, and at compressor stations, work camps, storage or waste disposal sites.

(7) The proposed pipeline route runs through the most productive forest areas in the Yukon,

particularly in the valley bottoms. The direct effects of a pipeline in such areas could be the loss or potential loss of merchantable timber now and the preclusion of forest production along the pipeline right-of-way for decades. Indirectly, forest stands flanking the cleared pipeline right-of-way would be exposed to wind damage, frost cracks, sun scalding, and subsequently these stands would be subject to insect and fungal infestation. The final result could be a disruption of forest productivity over areas extending beyond the cleared right-of-way.

(8) The proposed pipeline route traverses an area within which the degree of baseline information on vegetation varies between slim and none. There is the possibility therefore, that unique plant communities may be damaged or destroyed.

(9) As an alternative means to the disposal of slash material as proposed in the submission, for example, the burning over the covered pipeline trench, consideration could be given to using the slash as an insulation material.

(10) It is probable that demands placed on local industries for construction materials will provide pressures for increases in forest products. This could result in the ultimate reduction of the capacity of forests to yield an annual harvest at a sustained level.

The third area or category of

1 concerns relate to climatological and air quality.

2 One, deals with the siting of
3 compressor stations to minimize air quality effects.

4 The dispersive capability of an
5 air volume is directly related to the air flow through the
6 volume, and the air stability within the volume. These,
7 in turn, are directly related to the topographical constraints
8 on the air volume. Volume 5B-1 contains no documented
9 discussion of these topographic effects, nor of their
10 consideration on the siting of the compressor stations.

11 The second concern relates to
12 the adequacy of presently available meteorological data to
13 estimate the dispersion capability of the air volumes at
14 each of the seven compressor stations.

15 Listed wind data are obtained
16 in this submission from obsolete wind normals. Canadian
17 Normals Volume 3, in addition to containing updated wind
18 information for Snag, Teslin, Watson Lake, and Whitehorse
19 contains wind data for Burwash and Haines Junction, while the
20 publication, "Monthly Record of Meteorological Observations
21 in Canada" contains wind data for Beaver Creek and Kluane Lake.
22 Wind analyses for Snag, Whitehorse, Teslin and Watson Lake are
23 not accompanied by discussion on the relevance of these to
24 compressor sites, and only data for annual, January and July
25 wind frequencies are included.

26 No attempt was made to analyze

radiosonde data for Whitehorse, or to quote published normals, for example Preliminary Climatology of Ground-Based Inversions in Canada, in order to discuss the low-level air stability in the vicinity of compressor stations.

Probable and possible ground-level concentrations of CO, SO₂, and NO_x in the vicinity of compressor stations are not calculated, and attempts to relate such concentrations to effects on lichens, et cetera, have not been made.

The third concern relates to the effects of water vapour emitted at the seven compressor stations by the burning of natural gas (methane) as fuel.

The submission contains a brief reference to the fact that ice fog could occur, and there are tables that list the visibility restrictions as documented for 1941-1951 period. Much later and more complete visibility data are available.

It should have been noted that the gas turbine compressor of 29,000 horsepower consumes 4,316 cubic meters of natural gas per hour and emits approximately 8,200 kilograms of water vapour per hour. Using normal daily wintertime temperatures and relative humidities for the southwestern Yukon, the addition of only 8,700 kilograms of water vapour is sufficient to saturate the air within one half mile of the compressor station to a depth of a hundred feet. Accordingly, if a compressor station is

located next to, or just upwind, of the Alaska Highway, that section of the highway may be subjected to extended periods of dense ice fog in winter, with a consequent effect on road traffic and, in some cases, airport activity. This may be the major air quality effect of the pipeline.

The fourth concern relates to the emission of sound due to the operation of compressors.

The submission does not contain mention of the effects of cold temperatures and low-level inversions on the transporation of sound from the compressors.

In summary, no clear relationship between meteorology, topography and air quality has been shown in Volume 5B-1 such that they can be incorporated in the siting of compressor stations, while the use of the latest complete metecrological data is recommended.

The fourth category relates to wildlife concerns.

As indicated in my introductory remarks, many of the areas under the whole question of wildlife are being covered by the Yukon Territorial Government. So, we'll make some passing references to ungulates and fur bearers, but not in any great detail.

The Wildlife section of the National Energy Board submission, Volume 5B again, gives a good account of published information but contains very little

new data. Because of this, the statements made and conclusions reached in the report are of little value to specifically address environmental impact assessment of the proposed pipeline in the Alaska Highway corridor. Data presented in the report may be used to plan more intensive wildlife studies necessary for the preparation of environmental impact statement.

Concerns related to, first, migratory birds.

Activities associated with the pipeline construction and its operation interact with the migratory bird resource in a number of ways. These interactions or impacts, in a general vein, are amply discussed in various existing impact statements that deal with northern projects. The proposed pipeline raises similar concerns. The Canadian Wildlife Services is concerned about the harmful effects of the subject proposal on migratory birds and their habitat. Birds may be affected directly or through their habitat requirements, during breeding, brood rearing, molting or migrating. General concerns may be grouped as follows:

(1) The direct loss of habitat due to requirements for right-of-way and pipeline associated facilities;

(2) Impairment of wetland habitat due to changes brought on by the pipeline in the water

regime;

(3) Disturbance of birds

during construction;

(4) Disturbance of birds

during operation.

The above two points refer to presence and activities of humans and their machines, such as heavy equipment, aircraft, compressor stations.

(5) Direct mortality caused by toxic substances accidentally or otherwise released;

(6) Increased human use, recreational or otherwise brought about by the provision of increased access.

Data is lacking in this regard along the Alaska Highway in the Yukon. Without such data, it is not possible to make acceptable prediction on the magnitude, frequency or likelihood of adverse impacts or to propose specific mitigating measures. Some specific comments on the National Energy Board submission follow:

(a) information on species and numbers of even the major avian groups utilizing the area is lacking;

(b) ground truth surveys for all aspects of bird use are lacking;

(c) some wetland areas have been identified as migration and production areas but their

relative importance to the Yukon have not been considered;

(d) waterfowl habitat in addition to major wetland complexes have not been identified and very little attention was paid to submergent vegetation in ponds and lakes; and

(e) such bird groups as shorebirds and passerines were all but ignored.

The second category of concern relates to the non-migratory birds.

The lack of site-specific information relative to such bird groups as raptors and upland game birds precludes the assessment of impact of the proposed pipeline at this time.

The third area is mammals.

Moose in the Yukon, unlike those in more southern areas, tend to concentrate at certain seasons, based upon preliminary survey information by the Yukon Game Branch. This information is not entirely in agreement with the report or the submission. The problem of increased exploitation due to increased access should be identified as an impact of the pipeline. In light of the above, investigations into moose habitat, i.e. limiting factors, productivity, may be regarded as a part of the impact statement. Such data is lacking.

While the proponent has recognized the potential for impact upon sheep and that this impact may

extend beyond the construction phase, protection measures deal almost entirely with the construction phase and concentrate search for solutions to potential problems in the areas of timing of construction, employee training and route refinement. The possibility of realignment in critical sheep habitat needs further examination.

In spite of a virtual absence of baseline data on caribou, an impact prediction is formulated which tends to minimize conflict. More information is required to add credibility to the proponents prediction.

Grizzly populations in the Donjek and Kluane ranges and in the Alsek River Valley are of concern from the point of view of protecting denning areas and individual animals which may become camp nuisances. Therefore, information in denning areas should be refined. Bears located outside the Kluane-Donjek area, which may have other habitat requirements are not generally covered in the report. Field studies have not been done to support the statement that denning areas will not be bothered because of their altitude.

Fur bearer habitat and potential impact of the pipeline on these animals has been handled in a somewhat superficial manner. More information on sensitivity to construction activities on the behavior of fur bearers is needed.

The fifth area is Fisheries.

The concerns are similarized under three categories.

One. Comments on the Environmental Atlas. The atlas provides a very coarse, yet graphic, glossary of the pipeline-resource conflict. From a fisheries resource stance the information in the atlas is vague, not quantified and incomplete.

The information presented on fisheries utilization may be incorrect in view of recent data on overwintering sites, spawning and rearing areas provided by Fisheries Service studies. Species composition, abundance and timing would be a beneficial and essential supplement to the atlas.

In terms of comments on the Environmental Report. The statement by Foothills is very limited in aquatic resource data. Available data was used to provide information on the environmental setting and the technical project information. As a result of obvious data shortages in these areas, the report itself presents a very limited base to assess the potential impact to the aquatic resource, as a consequence of pipeline construction.

There is no solid information on species composition, distribution and abundance, timing and utilization by fish in rivers adjacent to the pipeline corridor.

From a fish resource point of view, the major impact of the pipeline construction will be

specific to the crossing site. Obstruction to fish passage, upstream or downstream, channelization and siltation at and downstream from the crossing site are major sources of impact. To effectively mitigate the impact on the resource, data specific to the impact area is required. Aquatic habitat characteristics, timing of life cycle stages, and species composition are essential parameters to be assessed. With this data, stream crossings can be timed to minimize impact on the fishery resource. Ideal timing would be a period when incubation has ceased, yet neither spawning nor overwintering timing would be affected.

The environmental statement by Foothills Pipe Lines does not provide the necessary information for mitigation. This information must be substantially upgraded before an effective statement can be made to determine, quantify and mitigate the environmental impacts of the proposed pipeline route.

The third area of social-economic concerns. The section of the submission, entitled: "Contemporary Perspective", makes limited reference to fishing activity. It is implied, but not supported, that commercial fishing has limited potential. There is no assessment of the importance of domestic fishing.

Recreational fishing, and other forms of water-related recreation, are not discussed in sufficient detail. Considering the importance of tourism

and of access to recreation opportunities for local people as well as for transient workers in the Yukon, this is a serious omission. The special needs of the native populations regarding fishing are not specifically addressed.

Another category relates to pipeline construction and related facilities.

One deals with the winter construction period. Concern has been expressed that the winter season may not be long enough to adequately protect the ground surface through the use of snow roads. This criticism is based on the concern that adequate consideration has not been given to annual variations in climate, snowfall and frost penetration.

The winter construction period would be critical for the 40.8 mile sections where the pipeline would operate below zero degrees Centigrade. If winter conditions were such that the pipeline section could not be completed without damage to the surface insulating mat, then the pipeline completion could be delayed for another year. With respect to the balance of the pipeline route where the gas above fifteen degrees Centigrade would be flowing, thermal degradation of permafrost adjacent to the pipeline trench will take place irrespective of proposed construction practices. This concern then is primarily for the section of the right-of-way outside the thermal zone of influence of the heated pipeline. However, on

areas of permafrost, where grading and slope cuts are proposed, the concerns are also academic unless some form of insulation to protect the permafrost is contemplated. If insulation of the exposed mineral soil is being considered, it has not been illustrated in any of the available Foothills material received to date.

On the same topic, in the submission of the Technical Project Description, the applicant speaks of curtailing construction operations during cold winter months, and in another part of the report, speaks of areas of sensitive permafrost terrain, and preparation of right-of-way which will be carried out in winter.

The applicant's reference to winter construction schedules is not supported by reasoning based on climatological data. Weather conditions such as extremely cold, blizzards, may curtail construction activity-- which may curtail construction activity are not specified. Threshold conditions necessary for winter construction in sensitive permafrost terrain, i.e. temperature, frost penetration, snow cover, are not specified. The concern is that, on the basis of information provided, no adequate assessment can be made as to whether or not the applicant's construction schedule is in fact realistic.

There is a need therefore for further specification as to under what climatological

conditions "construction of right-of-way will be carried out in winter, in sensitive permafrost terrain" as well as the threshold conditions which will curtail winter construction activity, and supported by climatological data, estimate the number of days during a winter the construction will be curtailed because of weather.

Another area of concern relates to construction camps and storage depots.

Foothills is considering several different categories of construction camps required for the project. These include the mainline pipeline construction crew camps, the mainline auxiliary (front-end) camps, small logistics camps, and compressor station construction camps, all of which would be equipped with their own kitchens and service facilities.

Except for compressor station camp sites, none of the construction camp sites or materials and fuel stockpile locations have been selected closer than a milepost designation. All camp and storage sites, other than for compressor stations, will be selected in close proximity to the Alaska Highway or other existing all-weather roads.

The information contained above is not sufficiently site-specific to enable an environmental evaluation to be made. The rationale for the auxiliary camp sites is also questionable in consideration of

winter working conditions. One could expect that portable camp sites with a minimum of kitchen and washroom facilities would be provided. If this were to occur, their water supply would be trucked in and the method of holding and treating waste could change considerably from that for a fix camp operation.

Another area of concern relates to camp water supply, sewage disposal and solid waste management.

These are to be designed according to site-specific conditions. An environmental evaluation can therefore not be made except in a very general nature.

Foothills has indicated that sewage from construction camps will receive the equivalent of secondary treatment prior to discharge. This may not be adequate treatment for discharges into some of the smaller streams frequented by fish, and particularly during the low winter stream discharge periods.

Design of treatment plants should also consider the fact that work camp sewage is stronger in BOD₅ and suspended solids from that of an equivalent number of people in a domestic situation. Consideration will also have to be given to the peak loading periods and its impact on treatment plant operations.

More information is also required

on operator requirements and how continuity of trained system operators will be maintained. Information is also required on the start-up and shut-down procedures for all of the treatment systems proposed.

Foothills has also supplied a minimum of information on solid waste handling procedures for the project. More information is required on the types and classes of solid wastes to be handled; on volumes generated; summer and winter operating procedures on the widespread discontinuous permafrost areas; disposal of hazardous and toxic materials; disposal of construction materials, drum, and discarded and broken equipment; selection standards for and types of incinerators being considered; et cetera.

Another area relates to the handling and storage of hazardous material and fuel.

With respect to hazardous materials, fuel storage and handling, Volume 2, Section 2, contains certain statements which hopefully will be refined by the company as further information is acquired. Such statements are also found in Volume 5. These references indicate the company does in fact have a reasonably strong awareness of the type of problems which may arise and how they should be avoided or their effects minimized.

Comments from another section of the Volume 5 also indicate an awareness of the necessity for contingency plans.

Protection measures and personnel training have also been addressed in the documents; however, more information will also be needed on these areas.

The following is a list of comments and questions which have arisen out of the review of the Foothills document.

(1) The use of methanol or water/methanol is listed in Volume 7 as a hydrostatic fluid. In Volume 5B, there are two references to the use of methanol, and in both cases the text indicates it will not be used. Also in Volume 5B, methanol is included in a list of substances likely to be encountered under spill circumstances. Clarification is needed in this situation.

(2) In Volume 5B there are several references to the dyking and location of dykes. In one section, the dyke was to be impervious and "where possible away from the critical aquatic habitat". Further on in the same volume, "All fuels and other toxic materials will be stored away from aquatic systems and within impervious dykes." The second statement better represents good handling and environmental concern by leaving out "where possible" and "critical". This inconsistency should be pointed out to the applicant, and the second statement inserted in the final document.

(3) Specifications for ensuring impermeability of all dykes for fuel and toxic/

hazardous materials should be provided by Foothills.

(4) In the outline, as identified on the pages, I won't list them here, Volume 5B, the company admits the plan is primarily meant for petroleum products, indicating that due to small volumes, other hazardous materials will not be environmentally significant. The company should amend this plan to ensure that adequate protection measures in the event of a spill other than hydrocarbons. The importance of proper hazardous material control and spill clean-up procedures must be recognized.

(5) The other point is the "Recommended Environmental Standards for the Design and Construction of a Mackenzie Valley Gas Pipeline" report by the Department of Environment uses 3,800 litres storage tank capacity as the lower limit for dyking such tanks. The Foothills application indicates "large" fuel storage areas will be dyked. It is anticipated that a similar standard will be made applicable to the Foothills Company should it bid successfully on a northern pipeline.

(6) There was no mention of landfill as a disposal technique. There should be a statement on this technique if it is to be proposed.

(7) Much more work is required by the applicant on restoration of spill sites. At present, the applicant states, to quote: "If deemed necessary, the affected area will be rehabilitated following

1 site inspection."

2 In conclusion, the applicant
3 has provided a minimum of detail concerning the acquisition,
4 type, and use for emergency handling and disposal of
5 hazardous materials.

6 Another area of concern
7 relates to restoration, revegetation and abandonment.

8 In regard to the Foothills
9 submission concerning abandonment, restoration and revegeta-
10 tion, the following deficiencies were identified:

11 (a) "Clean-up", as used by
12 Foothills, apparently means site restoration. Clean-up
13 plans relating to removal of equipment and debris are not
14 specifically addressed by Foothills.

15 (b) Foothills plans to restore
16 the construction zone "as nearly as is feasible to its
17 original condition to provide restoration of natural
18 drainage patterns ..." "Borrow pits are to be graded to
19 allow for revegetation where desired." Restoration would
20 include either erosion control measures and revegetation, or
21 disposition of gravel fill as appropriate for stabilization
22 of the right-of-way. Erosion control measures including
23 placing of granular fill, right-of-way berms and diversion
24 trenches across the right-of-way, and installation of back-
25 fill and rip-rap at stream banks would all be completed
26 immediately following winter construction." The applicant's

plans for repairing excavations, grading cut banks, removing dykes, closing airstrips and roads, replacing topsoil, constructing berm breaks, phasing out of sewage lagoons and recreating natural drainage patterns are not specifically addressed.

Foothills revegetation plan is not sufficiently detailed to permit an assessment. The applicant has conducted good research into species performance under varying conditions, and apparently will have an adequate supply of native species seeds.

Deficiencies are:

(1) Foothills plans to revegetate only "where it is deemed necessary..."

(2) Aerial seeding is planned but only ground seeding has been tested;

(3) A minimum acceptable level of revegetation success has not been specified nor has their monitoring program been presented;

(4) Seeds or stock free of parasites, disease or fungicides have not been specified;

(5) Methods of use of aircraft or ground vehicles during revegetation to prevent disturbance to wildlife and to the vegetation mat have not been specified.

And then there's a final statement on the actual submission. We have some general concerns and

they are as follows:

(1) Little information is provided on the total or combined environmental impact of the proposal on the Region or indeed on the longer term implications of establishing an energy corridor which may be expanded to accommodate additional facilities, such as pipelines, at a later date.

(2) The paving of the Alaska Highway from Haines Junction north to the Alaskan border, and the connecting road south to Haines, Alaska up to the B.C.-Alaska border will have a definite impact on approximately the northern two hundred miles of the proposed Foothills pipeline route. Although they would span different time periods, these two projects should not be considered in isolation from one another. However, some of the construction schedule conflicts could be resolved, if they both proceeded, to the benefit of protecting the environment.

Consideration should, therefore, be given to the use of the abandoned right-of-way and bridge structures for the support of the pipeline. In addition, it may be possible to design the new bridge crossings so as to support the additional weight of a pipeline. Camp site and storage site usage could be co-ordinated.

(3) The rationale for major pipeline routing deviations from the highways right-of-way in such areas as Teslin Lake, Kluane area and the Squanga Lake

Mr. M. Romaine

have not been well documented. In addition, the environmental effects of new rights-of-way and access roads to these previously inaccessible areas is a concern which has not been dealt with in an adequate manner.

That completes our comments on the submission, and I would like, Mr. Chairman, to run fairly quickly, if I can, through our comments on some of the alternatives that have been looked at.

We have done a preliminary evaluation of concerns in the Tintina Trench, the Dempster and the Klondike Valley alternatives.

Basically, our concerns are essentially the same as those determined for the Foothills route. However, this statement and the following information on the above areas must be considered at best tentative at this time, and are likely to change either in amplitude or direction with further field input.

First of all dealing with hydrology and terrain concerns. Permafrost, rough terrain and delicate vegetation complexes on the tundra are considered to be of great concern in the alternates at this time. As can be seen from the following information:

First, for the Dempster Highway, the major environmental concern on this route is like to be permafrost. At mile 50, the North Fork Pass, the following information has been brought forth:

Alpine Tundra under permafrost regime. It is very delicate as can be seen from a few construction cuts that have become gullies. Great care is being taken by road builders to avoid cuts. How can these problems be overcome in pipeline construction?

In the Eagle Plains area, there is continuous permafrost at one half to one foot below the surface. Road follows summits and crests of gently sloping hills showing exposure of shale and sandstone.

Construction in this area will likely result in an increase in suspended sediments and organic materials in streams and rivers; possibly also a drainage diversion.

In the footslopes of the Richardson Mountains, there is a very fragile tundra with permafrost at half a foot. Tributaries to major streams do not have exposed channels but form distinct seepage lines. Drainage was observed in active layers near the surface. Pipeline excavation might trigger development of new drainage patterns.

For the Klondike Valley, the concerns relate largely to bank and channel bed stability.

In the area from Carmacks to Minto on the Yukon River, the road follows the Yukon River along eastern banks where slope stability could be a problem. This is most evident at Tatchun Creek crossing, where

extensive slumping has occurred on the southern banks; gullies are evident on the northern slopes. There is also permafrost.

The impact of construction here could produce a possible increase in suspended sediment load and organic material during construction and maintenance could cause serious depression of dissolved oxygen during discharge under ice cover.

From Stewart Crossing to Slough Creek along the Stewart River there is a very active and wide river bed with frequent channel changes. Old banks are steep and high, actively eroding along outer banks of meanders. Both the north and south banks are susceptible. Special consideration should be given to permafrost areas.

In the area of the Flat Creek Junction with the Klondike River, bank undercutting at the junction with Klondike River is common. Placer activity in the various Flat Creek tributary introduces additional sediment load. There are bedrock exposures along the side-slopes with a small relatively steep footslope of debris at the base. The road crosses this footslope in several places. The Klondike River then crosses extensive reworked placer gravel from the 1900 Klondike mining activity.

Flat Creek and the Klondike River already carry heavy sediment load as a result of man-made activity; further impact in this area from pipeline

construction may be a factor which requires further investigation.

For the Tintina Trench, due to the rugged terrain in the Tintina Trench, special consideration should be given to overcoming environmental concerns associated with permafrost. The sixty miles of Tintina Trench where no man-made activities now exist must be paid special attention in the introduction of such activities.

Vegetation concerns for the alternatives: In identifying the concerns regarding these alternatives, the issues previously identified in the review of the Foothills' document are generally applicable. The initial concerns that have been identified to date include:

(1) The clearing and construction of the pipeline and its ancillary facilities will remove or alter significant areas of vegetation cover. Also, because new access will be necessary on the alternate routes, the land to be disturbed will be considerably greater than if the currently existing highway right-of-way is to be used.

(2) Drainage patterns will, as with the Foothills proposal, be disrupted and will likely result in vegetation changes.

(3) SO_2 from compressor stations may have some effect on sensitive organisms and plants.

(4) If alternate routes are used, it is likely that several proposed ecological reserves

will be crossed.

(5) In permafrost areas, the removal of plant cover could lead to thawing which may cause changes in drainage patterns, land and mud slides, slumping, thermokarst and ultimately re-vegetation problems.

(6) When pipelines and access roads cross stream valleys, clearing of the right-of-way and surface disturbance will remove portions of the most productive plant community in the area.

(7) Deficiencies in information, the most obvious deficiency, lies in the fact that no group has yet looked specifically at the alternate route corridors on a concentrated effort basis.

With respect to climate and air quality concerns, because of the lack of meteorological data along the route, it is difficult to assess (a) the dispersive capability at sites of compressor stations and hence the appropriateness of their locations, (b) ground level concentrations of emitted pollutants, (c) or the effects of pollutants on sensitive flora and fauna.

The major concern is the formation of ice fog in winter, resulting from the emission of water vapour, with its consequent effect on highway traffic and on possible construction and maintenance airfields which may be located adjacent to compressor stations.

Another concern from the

climatology point of view is the emission and transport of sound due to the operation of compressors.

To satisfy these concerns, it is desirable to establish a network of meteorological stations to obtain baseline data on low-level air circulation, temperature, precipitation and air stability.

With respect to wildlife concerns. Information on migratory and non-migratory birds, as well as ungulates is minimal, and in most cases non-existent along the alternate routes considered. This lack of information precludes a meaningful comparison with the proposed Foothills route. Information, however, on the yearly life cycles of these animals along the alternate routes is essential both for a comparison with the Foothills proposed route and also for an evaluation of environmental impact within those corridors.

In summary, the general points of concern are:

- 1) Direct loss of habitat (and displacement)
- 2) Impairment of habitat
- 3) Disturbance during construction and operation
- 4) Direct mortality due to toxic substances
- 5) Increased human access to

animal populations.

Some information does exist on the biology of the Porcupine caribou herd and its relationship to the Dempster Highway. Such information indicates that activities and noise associated with the highway construction have a disturbing effect on these animals.

From a Fisheries point of view, the virtual absence of information on the fisheries resource in the alternative route zones precludes the detailing of concerns at this time respecting overwintering sites, spawning and rearing areas, species composition, distribution, abundance, as well as present use of the fish resource.

Concerns regarding pipeline construction and related facilities. Our general concerns, at this time, is that the information required to prepare guidelines for design and construction is unavailable. Nevertheless, several factors emerge even at this early date as potential problem areas. These are as follows:

With respect to the Dempster lateral, problem areas regarding borrow operations, cuts and fills in permafrost and alignment.

Concerns related to water supply, the supply of potable water for large camp installations will be a problem, especially in the Eagle Plain area. Some of the highway construction camps with much smaller crews than those envisioned for a pipeline had to haul water from

various distances. The magnitude of this problem will depend on camp size, location and season of operation.

(b) The problems of waste disposal, sewage, all camp sewages will require at least secondary equivalent treatment and have appropriate cold weather protection.

In the Eagle Plain area, especially, effluent disposal from large camps will be a problem since there are few receiving waters.

The problem is site-specific and depends on camp size, location, season and duration.

Disposal of large amounts of camp-type solid waste could create problems in the higher portions of the route. Discontinuous permafrost and lack of borrow material could restrict the use of landfill sites. Disposal methods and locations will have to be specified.

Air Quality. Areas where open burning is to be carried out should be specified. If incinerators are to be used for solid waste reduction, they should meet the federal incinerator specifications.

The majority of material transported to the construction zone will move along the Dempster Highway, both from the south and the north.

The initial concern is the construction schedule since movements will be affected by

weather and wildlife restrictions.

The siting of staging and stockpile sites, especially if men will be accommodated as well, will produce waste management requirements.

With respect to the Klondike Highway, this proposed route follows a well established highway corridor and therefore the concerns will be similar to those for the Foothills route.

With respect to waste supply and waste management and disposal, information is required on camp location, size and type. Operational requirements could be site-specific. Availability of water supplies and waste receiving waters would not be as critical as for the Dempster lateral.

The proposed route parallels an existing transportation route, hence there should be a minimum of environmental disruptions by the moving of men and material. If there are supply camps involved, waste management concerns listed previously would be applicable.

For the Tintina Trench route:
For this route proposal, very little is known about it other than a line on the map. In general, however, those concerns listed above on water supply and waste management would be applicable, that is, more route specific and site-specific information.

Finally, as a general concern,

Mr. H. Romaine
Mr. C. Wykes

it is likely that all alternate routes, including the Dempster lateral, will require major access road construction paralleling the pipeline route to supply materials and manpower. This will put an added stress on the surrounding environment, both during the construction phase; as a result of the additions of manpower, materials, and the extension of the amount of time which must be spent in the area to complete the additional work, and after construction; as the new access roads will open up previously inaccessible areas. Concerns regarding such supporting facilities may equal or even exceed those of the actual pipeline itself.

I have a number of summary points here, Mr. Chairman, but I think I'll leave them at this stage.

MR. CHAIRMAN: Thank you very much. Before I ask the panel if they have any questions, I'll ask if the coffee is ready. Is there any? No. Okay, questions by the panel please?

Mr. Wykes?

MR. WYKES: Mr. Romaine, as you are aware, in Foothills' submission, they have suggested submerged river crossings for the pipeline. Your brief indicates that they should consider above-stream crossings and perhaps in conjunction with highway bridges in conjunction with the new relocation and paving of the Alaska Highway between Haines and Beaver Creek.

Could you expand a little bit

for me on the rationale for why you are recommending they
look at above-surface river crossings?

MR. ROMAINE: I'll have to
qualify my remarks. I'm not the expert in this field, but
my understanding of the comment in the brief basically
related to getting the pipeline up above the problems on the
fans, in terms of areas where there was no -- if that's the
point you were referring to -- areas where there's no real
distinct firm permanent channel.

MR. WYKES: I was looking at
a section on page twenty-two of your brief where you suggest,
it says: "In addition, it may be possible to design the new
bridge crossings so as to support the additional weight of a
pipeline."

MR. ROMAINE: Yes. I'm sorry,
could you repeat your question again then?

MR. WYKES: The rationale as
to why you are suggesting that the pipeline crossings in
these areas might be above-surface, rather than submerged
river crossings, as proposed by Foothills?

MR. ROMAINE: I think the point
that we were making at this stage was a possibility of
merging the two facilities, and minimizing the overall impact
of both of them, and if it was possible, to utilize a
crossing in the manner as we suggested here that it should
be considered.

Mr. C. Wykes
Mr. M. Romaine

1 MR. WYKES: Could I ask one
2 additional question at this time?

3 MR. CHAIRMAN: Yes.

4 MR. WYKES: I realize the
5 concern in the area where the pipeline is proposed to pass
6 in close proximity to the abandoned tailings pond at Quill
7 Creek, however, you also referred to trying to avoid abandoned
8 placer operations -- placer mining operations. I was
9 wondering what the rationale was for that?

10 MR. ROMAINE: You are again
11 referring to the alternatives here, I believe, in terms of --

12 MR. WYKES: No, this is again
13 in the Burwash Creek area, I believe. Page six, is it? Yes.
14 It says: "Finally, reference is made to placer activities
15 in Carlick and Burwash Creeks, but no mention of old mine
16 tailings as a potential source of water pollution is made."
17 What types of water pollution would you anticipate to come
18 from abandoned placer operations?

19 MR. ROMAINE: I can't give you
20 an answer on that. I'll have to take that back and get that
21 clarified as a question.

22 MR. WYKES: Thank you.

23 MR. CHAIRMAN: I was interested
24 on page four of your brief, when you were speaking of lakes
25 which are dammed by glaciers, and they can suddenly drain
26 and cause problems downstream. Have you any expectation

1 about this in terms of probability of these lakes emptying
2 out rapidly? Is there evidence that they have happened in
3 the past, and how often, and so on?

4 MR. ROMAINE: My understanding
5 again is limited, because I'm not the expert in the field,
6 is that that has been recognized as a general concern. The
7 degree of documentation, I'm not sure on that.

8 MR. CHAIRMAN: Mr. Trevor?

9 MR. TREVOR: A couple of small
10 questions if I may, please. On page ten, sub-paragraph
11 nine, there's the statement that "consideration should be
12 given to using the slash as an insulation material." To
13 what -- what reference is being made there, as an insulation
14 material for what purpose?

15 MR. ROMAINE: We didn't specify
16 that, but at this stage we are aware of consideration has
17 been given in other northern construction of using it perhaps
18 as a base to protect the surface of the terrain. Perhaps
19 if there is to be an overlay of material on that, such as
20 perhaps a storage site, or how it may be used to protect
21 areas that are exposed when they are cut in permafrost areas.
22 There was a question that was just raised as to -- we didn't
23 see it covered, and it seemed to be an area that has been
24 given a fair amount of thought in other northern construction
25 routes as a possible way of having a ready source of
26 insulation material available, for whatever the activity may be.

1 MR. TREVOR: And on page twenty,
2 sub-paragraph (f), the question of landfill as a disposal
3 technique. Now, in all the previous remarks, we're jumping
4 around quite a bit, so landfill as a disposal technique for
5 what? What are you talking about? What are you going to
6 dispose of?

MR. ROMAINE: I'm not sure
8 what the intent of that was. I should point out --

9 MR. TREVOR: Perhaps we could
10 get that clarified?

11 MR. ROMAINE: --that all the
12 questions that I can't answer at this stage, we'll certainly
13 provide answers for them at the July session.

14 MR. TREVOR: Thank you.

15 MR. CHAIRMAN: I have a question
16 on the ice-fog issue you raised. As I understand your concern,
17 is that in periods of inversion in the winter the water
18 coming from the compressor stations will saturate the air
19 and cause a fog, which may extend over the highway. In
20 another part of the brief you suggest that the pipeline
21 should be routed as close to the highway as possible. Could
22 you give us some impression of distances you would suggest
23 compressor sites should be away from the highway? I realize
24 it depends on local terrain and so on, but are you suggesting
25 a relocation of compressor sites away from highways?

26 MR. ROMAINE: What we're up to

1 at this stage as a Department is that we are now trying to
2 collect more information on this, and that includes a visit
3 to the proposed compressor sites. So, again, I think that
4 we'll probably come back with more information on that. At
5 this stage, basically, they were just concerns that we
6 were attempting to identify and not to make any recommendations
7 as to changes suggested.

8 MR. CHAIRMAN: But in principle,
9 this is what you are aiming at, are you?

10 MR. ROMAINE: I think the
11 concern was raised in terms of the amount of information
12 and that the problem may have not been recognized in the
13 application. That would be a very logical observation to
14 make I believe that you have just made as to possible
15 changes in the siting of the compressor stations.

16 MR. CHAIRMAN: Dr. LaCate?

17 DR. LACATE: Just following up
18 on Harry's question, I guess I'm right in assuming that
19 D.F.E.'s general recommendation is to keep the pipeline as
20 close to the highway as possible?

21 MR. ROMAINE: The concern as
22 identified in our report, and if you are aware of our
23 Department, it's a fair sized Department with a number of
24 agencies, the concern as identified in the report was
25 mainly related to the general concern of disturbance to say
26 "pristine" areas. I think that that was the intent of the

1 concern being identified at this stage. As you can see, in
2 the identification of our concerns at this point, we have not
3 specified concerns say with fisheries or the wildlife at
4 crossings, so it's quite conceivable when we have more
5 information available that we will have to synthesize those
6 internally to sort of weight what the benefits and costs are
7 of certain areas. It may be that in areas where stream
8 crossings are of critical importance, that that recommendation
9 may not stand. It did indicate, we said I believe, where
10 possible it would include consideration of other concerns as
11 well.

12 DR. LACATE: Yes, the one item
13 I was thinking of in addition to the compressor stations was
14 on page three, the business of crossing the high energy
15 streams further up, and we've had other testimony suggesting
16 that this would lead to quite a divergence from the existing
17 rights-of-way. So this might be kept as a point to bring
18 up in the July fifth sessions.

19 MR. ROMAINE: Very good.

20 MR. CHAIRMAN: Owen, you had
21 some questions?

22 Dr. Hughes?

23 DR. HUGHES: You have a
24 recommendation that the pipeline be kept as close to the
25 highway as possible. We've also had recommendations from
26 a number of people that the pipeline, rather than having a

new -- still another, providing still another right-of-way line, follow the existing pipeline. There is some, quite often these two recommendations aren't compatible because the existing pipeline is some distance from the highway. I wonder if you could give us some guidelines in how we make the decision as to whether -- where the pipeline should follow closely along the highway where the existing pipeline would be acceptable.

Is your main concern for getting away from the highway that of the problem of access to the highway when in some emergency situation, access to the pipeline in some emergency situation and the difficulties that may ensue from that?

MR. POMAIN: It's partly that. I believe that to some degree, I think that the fact that you are dwelling on this question of -- that we raised about the pipeline routing is an important one, but I don't think it should be taken out of context in the way that we have indicated here. It was under a vegetation concern, and it was dealt with strictly from that perspective. As I indicated previously, and I hate to repeat myself, but basically, I think that we as a Department when we get more information in, will be able to sort of merge our concerns perhaps better than we have done at this stage in terms of where we feel that there should be departures or where it should be close. So, I guess what I'm really saying

is: don't take it out of context. We were referring to it in the instances there solely from the perspective of the impact on opening up a new area and the impact on the forest resource or vegetation.

DR. HUGHES: Thank you.

MR. CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: On the bottom of page fifteen, and the top of sixteen of your submission, you make some statements on the recreational and sport fishing in the Yukon is a serious omission as representing the Department charged with the responsibility of managing that resource, can you shed some light for the panel on your Department's analysis of the importance of the sport and recreational fishery in southern Yukon to the tourist industry and to the Yukon population?

MR. ROMAINE: I believe that in the document here, all we've sort of identified so far is a deficiency. I am not an expert in this area. I believe that it's a general concern if we can say that, as to the fisheries resource use obviously, from our Department's point of view. As to the details that you were seeking, I cannot provide you with that at this stage.

MR. CHAMBERS: Can your experts provide us with some of that information in July?

MR. ROMAINE: Yes. What I intend to do is to take all your questions here that have not been

answered back and to ensure that we bring them forward during July. I think that whether or not you raised them, although that certainly highlights them, we obviously recognize that these were concerns that we had to flush out at any rate in terms of the rationale and specifics for the July session.

MR. CHAIRMAN: Mr. Wykes?

MR. WYKES: Mr. Pomaine, on page ten of your submission you refer to the possibility of increased demands being put on forest products materials and the possibility that: "This could result in the ultimate reduction of the capacity of Yukon forests to yield an annual harvest at a sustained level."

I was wondering what the rationale was for that statement or where the information was derived to make that statement?

MR. POMAINÉ: Basically, what we're trying to say there, and I don't think it comes out too well, was that all the associated activities with pipeline construction could put a demand on the forest resources if the decision was to increase harvesting in the Yukon Territory.

The concern being that during the period of construction, and during the period of demand, that you may have large areas cut at that stage, and because of the low rate of growth in terms of the problems with

succession -- successional stages, that you could end up with large areas that would not be reforested immediately and that could effect, sort of, the overall annual harvest.

MR. WYKES: Is that judgment based on an understanding that the present rate of utilization and the yield of Yukon forests?

MR. ROMAINE: It is just a concern that we have not substantiated, and if you look, I believe, on page nine, we say that some of these concerns may be substantiated or refuted. It was just to identify it as a question.

MR. CHAIRMAN: I have one question, probably followed by Dr. Hughes. In your comparison of routes you mention several places there is permafrost and so on. By this do you mean there is permafrost that could be a construction -- could lead to a construction problem, or simply there is permafrost? Bearing in mind permafrost in bedrock may be of no consequence.

MR. ROMAINE: At this stage, again, all we're identifying is the concern that there is permafrost there. The problem of being, in some of the routes, I suppose is to where the proposed pipeline will go within the corridor. So, we've just identified in a very quick and dirty way that these are some potential concerns. Permafrost obviously being a concern no matter where you encounter it.

MR. CHAIRMAN: But it doesn't necessarily refer to ice-rich -- richness. What I'm trying to establish is there is really two situations in permafrost; one where there is ice-rich permafrost which could lead to melting and subsidence and so on; and the other situation where the material is not ice-rich and therefore this hazard doesn't exist as much. This refers simply to the fact that it's permafrost, not necessarily ice-rich permafrost?

MR. ROMAINE: At this stage, I don't believe that we had the time to try to delineate those and I say, we were looking at corridors more than the routing which may eliminate some of the concerns.

MR. CHAIRMAN: Okay, one more. On page seventeen, you refer to a possible problem that there wouldn't be enough snow some winters in order to construct the snow roads in order to construct the line in the areas allotted for winter construction. Do you have -- what is the snowfall data like in that area? Can you supply us with the data in that first hundred miles? Or are the snowfall stations some distance away from the road? Is it an actual data interpretation you're making here, or is it -- in other words is there data on the route, or is it an interpretation of other stations that you used in making this?

MR. ROMAINE: I can't answer that. I'm not sure what data is available for the route at this stage. All that concern was generated within the -- by

the experts that did generate it.

MR. CHAIRMAN: Also, I would be interested to know when the snow generally comes, because obviously there has to be a certain amount of snow before you can start road construction in the season.

MR. ROMAINE: Do I take it, your question then, obviously since I can't answer it here is that basically -- this is information that the panel is seeking that it would be of value to it if we can supply it during the July session.

MR. CHAIRMAN: Yes, if the experts who wrote this could supply us with that information I would be grateful.

Dr. Hughes?

DR. HUGHES: On page twenty-nine you say: "It is likely that all alternate routes including the Dempster lateral will require major access road construction paralleling the pipeline route to supply materials and manpower." Now I can see this in the case say of the Tintina Trench proposal where you have a section from Stewart Crossing, going through until you would join with the Campbell Highway.

I don't see the point with regard to the Klondike Highway -- in the Dempster Highway if you assume that that remaining thirty miles to the Dempster Highway. Do you see the highway departing -- or the pipeline departing

much further from the highway on those routes than say on the Alaska Highway route? What is the basis of that statement?

MR. ROMAINE: I would really think in this case that in the rush when we were putting this together that we didn't fine-tune it sufficiently.

I really believe that what we did mean that areas where there is an existing rights-of-way, existing roads, for those sections of the alternatives that would be where the concern would be.

DR. HUGHES: So, that of the -- at least the alternatives that you have addressed yourself to, we're talking mainly about that stretch then from Stewart River through to the Campbell Highway on a possible Tintina route. Is that right?

MR. ROMAINE: My understanding is that the concerns here were basically for areas where new road construction would be required, irrespective of the route that we were talking about. But I agree with you that it probably isn't as sweeping a concern as it indicates in here.

DR. HUGHES: Thank you.

MR. CHAIRMAN: The other panel members? Coffee is not yet ready. It looks like we'll be at lunch time before the coffee is ready.

Dr. Beanlands?

DR. BEANLANDS: Mr. Romaine, I'm interested in your reference to the loss of commercial timber

Dr. Beanlands
Mr. M. Romaine
Dr. V. Schilder

571

as one of the panel members. According to my scratch pad calculations, we're looking in total at clearing about ten square miles of terrain for the entire Yukon route. Certainly no more than a quarter of that at the most, at the very most, would be through what you might call prime commercial timber, which would be on the eastern Watson Lake end of the route. So, you're looking at a loss probably in the order of two thousand acres.

It's my guess, I'm not sure on the forest fire statistics, but it's my guess that a two thousand acre forest fire in the Yukon is not considered as a catastrophic event. I'm wondering what the real basis for construing a significant loss in commercial timber was when you look at those kinds of figures?

MR. ROMAINE: That again may be one of the areas that will be refuted. Based on your observation, I certainly can't answer that in detail. It's something that we'll certainly bring forward and verify if that indeed is a concern. I think that if indeed it isn't that we should also verify it that way.

DR. BEANLANDS: Thank you.

DR. SCHILDER: Mr. Chairman, I have a question for the intervenor. I would like to find out for myself, because of my background I know what it means to be in deep waters, whether the brief contains the official position of the Department of Fisheries and Environment, or

1 as it implies, if it is implied, on the first page of the
2 brief, or whether it expresses the individual expert opinion?
3 Could you answer this please?

4 MR. ROMAINE: I believe that
5 to some degree, that they are one and the same. If these
6 are the experts' opinions, and the various experts within
7 the Department put them together, that's the Departmental
8 position. It depends on the level you are talking about.
9 But in this case, the concerns have been identified by all
10 the services of the Department of Environment that have an
11 input in here, and therefore it represents the Departmental
12 position of concerns from an expert point of view at this
13 stage.

14 DR. SCHILDER: I have a
15 following question concerning your environmental concerns
16 about drainage disruption, referring to Kluane Lake and a
17 number of high energy streams. My question is; are your
18 concerns based on the observations from the highway, or are
19 your concerns based on the major studies of the whole area?

20 MR. ROMAINE: During the period
21 of time that we have had to prepare our brief, this is
22 based upon, a larger review, as I understand it, as well as
23 field observations, particularly on the hydrological side of
24 things.

25 DR. SCHILDER: On page three,
26 that's a question for Mr. Mike Romaine. I'm not sure is

the first paragraph: "It is suggested that the location of the pipeline along the foothills above the head of the alluvial fans be considered as a preventative action; the pipeline should be buried below scour depth over the entire reach from about mile 115 to 145."

It is the intervenor's recommendation or it is a quotation from the applicant's proposal?

MP. FOMAINÉ: I believe that that is our suggestion.

DR. SCHILDER: Could I have, in that case, a question to the representative of Foothills. Would you be prepared to accommodate the recommendation within the design of your project?

MR. BOUCKHOUT: The point raised by Mr. Romaine in this instance, is one that is obviously confronted when one locates a pipeline in an area such as this. I am familiar with the area from having viewed it from the ground as well as from the air. The discussion is primarily related, as I recall, at least Mr. Romaine's discussion, to alluvial fans. We're talking about a very narrow band between the Kluane ranges and Kluane Lake.

It's my understanding, and I'm not a geotechnical engineer, that alluvial fans tend to be relatively low in silt content in high energy streams in this particular area. From my familiarity with the area, and

having seen the work in the area that has been done by the Department of Public Works in terms of training the streams, the materials with which they are working are by and large granular materials, they are stream-washed gravels and so on.

Yes, it would be taken into account. Precisely where we are in the fans, I'm not sure, although in the area we are on the side of the highway remote from Kluane Lake, and it's my understanding that we are not on the major portion of the fan. In other words, we are in fact, toward the headwaters of the small high-energy streams. If we were to move even farther away, then we would be moving farther up the slope, farther toward the Kluane ranges. Immediately when you do that, you have to consider other implications. What is on those Kluane ranges? How close can you safely go to them? You're on to slopes then as opposed to being on flat ground, which is more easily stabilized, and more easily handled from an engineering point of view.

So, it's a matter of looking at the implications of one as opposed to the other. In one particular area we may be able to handle it quite adequately; in another area, we may not.

DR. SCHILDER: My understanding is that the present spectacular erosion on these small streams we feel that area is mostly based on malpractices of

the operation of the highways due to lack of understanding to the morphological processes on the streams, rather than on anything else. I do recognize that due to my personal observations, there are concerns -- various concerns-- concerning potential erosion problems as expressed by the intervenor. My question would be, for the applicant, whether this concern has been recognized and what are the key proponents mitigating design measures to reduce these potential problems?

MR. BOUCKHOUT: Dr. Schilder, I can't really comment in any great detail regarding the design measures in that particular area. I think we have discussed previously, and Mr. Claridge has certainly discussed the concerns with respect to erosion. Some of the ways, from a pipeline point of view, in which you confront such potential problems, are detailed assessment of site-specific locations, which is obviously necessary to evaluate just what the significance of the concern is in the first place. Scour predictions in all cases are done, particularly on streams such as this. We have in fact done scour predictions on the White and Donjek as an instance. These lead you to an assessment of the necessity for the depth of burial with respect to the pipeline system.

Again, as I say, we are certainly aware of the fact that these are high energy streams. One only has to fly over it and look at the area and look at the

streams along this portion of the route to understand that. They are subject to movement. They tend to be quite flashy. In other words, the movement of water is very much related to snow melt and so on, it's not a long sustained kind of affair. Erosion protection in terms of granular materials would certainly be necessary in certain cases. The actual designing of that protection, the grain size of the granular material used would be dependent on the energy of the streams. What could be moved by the streams and what could not.

This is essentially the way it is confronted. It is recognized as a problem, certainly. Our geotechnical people have looked at it and have indicated that this is going to require some site-specific design.

DR. SCHILDER: Could I have another question concerning major river crossings. I share very much a number of concerns in this respect, and I would like to ask the applicant what methods have been used to investigate the natural conditions which may affect, in the long run, the safety of these crossings within that area? What methods have been used and what utilization might have been done in connection with similar types of regimes -- I mean similar types of streams or similar types of constructions, either in permafrost areas perhaps in Soviet Russia, or in other parts of the world, or in the State of Alaska?

MR. BOUCKHOUT: Dr. Schilder, the methods characteristically used for investigating such

circumstances are obviously visual inspection of the crossings, and I should perhaps preface my remarks in saying that the results of the various methods, and the results of the various studies done on the crossings will indicate whether the crossing selected is in fact the crossing which is most appropriate, or whether another crossing should be made.

There are surveying techniques to survey the slope angles, the river bed itself, the depth of the river bed. Additionally, geotechnical drilling is undertaken on rivers, for instance, I have already mentioned, we have done some drilling on both the White and Donjek Rivers. This drilling is done to provide a mechanism in part to estimate scour potential, the estimation of scour potential is then utilized in assessing the necessary depth of burial for the pipe. You also assess the characteristics of the flow in the river and the potential characteristics of the flow in the river via estimating the drainage basin affected by the river, the drainage basin which contributes water to the particular river. You consider such things as flood events, both as a result of snow melts, glacier melt in some instances in this case, as well as from rainstorms. This again, gives you another measure of what one can anticipate in terms of flow characteristics in a particular river.

This is utilized in the final

design for the river crossing. In other words, you do a fifty or a hundred year return flood prediction, which has been done. We have done preliminary designs on many of the rivers. A document has been provided to the panel entitled: "Design Data for Major River Crossings", which indicates some of the information which is gathered in order to design for a particular river crossing. The amount of data necessary is dependent on the circumstances.

A river such as the White or Donjek, for instance, may very well not require the same amount of data and the same kinds of data as would a river such as the Rancheria. I'm only using that as an example. In other words, it depends on the relevant characteristics of the basin, of the river bed itself, of the slopes, of the river confines, and so on. Design of river crossings is quite a standard process.

There are, and I'm sure I would not be underselling it in saying hundreds of buried river crossings are in operation today, and through the experience of having dealt with these buried river crossings, you build up a base of experience, which is applied subsequently to design for future crossings. The kinds of rivers we're dealing with, aside from, in some instances, the occurrence of permafrost, which is another implication, are not different from any of the rivers that are currently crossed by the operating pipelines.

DR. SCHILDER: What is the applicant's experience with a similar type of river crossings draining the St. Elias Mountains?

MR. BOUCKHOUT: Draining swamp areas and so on?

DR. SCHILDER: No, well the question is: what is the applicant's experience with a similar type of river crossing to the proposed crossing on the rivers draining the St. Elias Mountains? I'm referring to the White, Donjek, Duke and Slims Rivers.

MR. BOUCKHOUT: I personally can't answer that. I could give you, at a future date, similar instances which have been confronted by, for instance, Westcoast Transmission, Alberta Gas TrunkLine, I'm not sure if I would be able to provide you with it, but I am certain there is experience of this nature with Trans-Mountain Pipeline, for instance, and certainly in many cases any pipeline systems existing in mountain areas would be quite comparable to these kinds of things.

DR. SCHILDER: What investigations have you --

MR. CHAIRMAN: I would like to invite those people who would like a cup of coffee -- we'll take five minutes.

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: I suggest that we work through until twelve thirty and then break until one thirty, if that's okay with the main participants.

Mr. Bouckhout is smiling he isn't nodding yes or no.

Okay, we are questioning the intervenor on his presentation. Dr. Schilder has another question.

DR. SCHILDER: Mr. Chairman, I would like to ask of the intervenor whether he's relating to page three of the briefing, whether the intervenor is convinced that only thorough morphological study on these rivers could qualify the situation regarding the depth in which the pipeline should be buried, or whether perhaps he might modify his standpoint that perhaps only the knowledge on the hydrological regime together with the hydrologic characteristic of that particular range and geotechnical -- the relevant geotechnical information in that range would be sufficient to derive the construction details?

MR. ROMAINE: That is a statement only, we put in here as a statement, so the depth of knowledge required to resolve the problem although we, here in July, will take that under advisement that perhaps this is not our role at this stage, other than to identify the deficiencies as we see it.

DR. SCHILDER: Mr. Chairman, could I have another question for the intervenor relevant to page four. Could you identify the source of interesting information on a possibility of glacial outburst floods, within the White, Donjek, and Slim Basins.

MR. CHAIRMAN: Dr. Schilder, I already asked that question.

DR. SCHILDER: I'm sorry.

MR. CHAIRMAN: He has that under advisement.

DR. SCHILDER: I'm sorry, I overlooked that. I'm sorry.

MR. CHAIRMAN: Okay, Mr. Lister?

MR. LISTER: Mr. Romaine, the panel has heard a concern from the public at various locations along the proposed route that the construction of a pipeline may bring with it increased pressure and exploitation on fish and wildlife. This concern, particularly in the fisheries section is not identified in your brief. I wondered if this suggested that your Department did not view this particular concern as a real problem?

MR. ROMAINE: I believe that we probably cover that indirectly two ways. At the top of page sixteen where we talk about the -- in the current use as being an omission. It covers in part, the assessment of the importance of domestic fisheries covers it in part. In our

Mr. M. Romaine
Mr. B. Lister
Dr. Beanlands
Mr. L. Bouckhout

582

General Concerns, we have also identified the question of the sort of broader ramifications of pipeline construction and the opening up of access to other areas. So, I would say that perhaps while we haven't stated it succinctly that that would be indirectly covered in our submission at this stage at any rate.

MR. LISTER: Okay, thank you.

MR. CHAIRMAN: Dr. Beanlands?

DR. BEANLANDS: I'm not sure

whether to address this question to Mr. Romaine, or perhaps Mr. Bouckhout might be able to give me some help on this one. Never having driven a front end loader, I have difficulty importing two million cubic yards of granular material in to perspective. My interest is in relating that to the number of existing borrow pits, how that volume might relate to the volumes required by the maintenance of the Alaska Highway; how that volume might relate to the projected volume required for the Shakwack project; how far can you economically truck the aggregate that you need; how much of that aggregate is available close to the highway? These are the kinds of things that the actual amount is not what's really bothering me.

MR. BOUCKHOUT: I might, Dr. Beanlands, preface my remarks by saying, in my recollection, and we do have the number somewhere, along the pipeline route in Yukon, there are some one hundred twenty-five existing borrow sites, which have been utilized for the highway. I

this particularly for the highway. Additionally, I believe there are some inventory studies on current borrow sources and on being undertaken. Now, if you have viewed the Alaska Highway route from the air, you will note that there is by no means a deficiency of granular materials. The nature of the terrain is such that there are very many and very extensive esker deposits and so on.

Having talked to our construction department about the borrow requirements, they indicated and we do agree that the figure of about two million cubic yards does not take into account some of the other things. We are thinking generally in terms more like three million cubic yards, or in that order. The indication from our construction department is that there is sufficient material in the vast majority of those existing pits to fulfill the pipeline requirements.

Our current thinking is that unless, for some reason we cannot do so, we would attempt to use existing pits, rather than opening new pits ourselves.

The accessibility provided by the highway, which includes accessibility to these pits, provides us with an immediate mechanism to obtain the gravel, to transport the gravel in sufficient quantities for our purposes.

Obviously, the utilization of existing pits, and I will tack on the qualifier "where

possible', we haven't gone in great detail to assure ourselves that this will be possible, although we are quite sure it will be. This will require, obviously, discussions with the various other interest groups and agencies, including the Department of Public Works, including the various representatives of the communities in terms of community gravel requirements projected in the long term, and so on. But, from having looked at the gravel availability along the line, we are convinced that there is no problem, absolutely no problem in obtain our requirements. And our requirements are really not high by any means in relationship to highway construction and highway building and highway requirements.

DR. BEANLANDS: Could I pursue it a bit farther. I understand that there may be areas where you will need aggregate to offset or to augment the insulating around the pipe, and to offset some terrain degradation as a bed, for example, in building up around the sides of the pipe. Presumably you will need that material in sensitive terrain. How do you propose to get the aggregate to where you need it?

MR. BOUCKHOUT: Some of that aggregate would be required in sensitive terrain. By no means -- the bulk of it is not required of the estimates we are talking about. That aggregate would be taken to the site in the course of construction. The bulk of the sensitive terrain is presently scheduled for winter construction, and

therefore, of course, the materials would then be trucked into the area where necessary, during that period of time.

DR. BEANLANDS: You would truck it over the right-of-way would you?

MR. BOUCKHOUT: Yes, it would be trucked along the highway to an access point to the right-of-way, and then along the right-of-way. This is another reason for the utilization of the existing transportation corridor, that it greatly decreases the requirements for vehicle activity on the right-of-way. The existing road can be used to move heavy equipment, aggregate and so on, to an access point, and thereby decreasing the amount of activity actually required on the right-of-way.

DR. BEANLANDS: Thank you. Mr. Chairman, I have just one other short question for Mr. Romaine.

Do you presently have staff in the field now, Mr. Romaine, that is the Department of Fisheries and Environment?

MR. ROMAINE: Yes, we do.

DR. BEANLANDS: How do you feel, or how does the Department feel about the timing of the pipeline project. In other words, does the Department feel that there is enough time to gather the information required to fill in the data gaps between now and when the projected start-up date is?

MR. ROMAINE: Well, we have a

number of concerns. Our immediate one, of course, is to provide information to address, if nothing else, the kinds of questions that were raised here that require clarification. That takes time.

Obviously, if you see the kinds of -- the information that we have presently available on alternatives, certainly there is a need for more information there. In the very short term timeframe in terms of responding to the panel sessions in July, in the longer term, I think one of the problems that certainly is of concern and personally I'm not aware of the type of timeframe that we're looking at, but certainly from a Fisheries and Wildlife point of view, there is data gaps that can only be filled by winter surveys, for example. I think that that kind of information (a) is required to have a clear picture of the problem, but more importantly, I guess, is the question as to the time frame as to when that data will be collected. Whether it's this year or next year, but certainly it would be information that would be of significance to the final assessment, as I understand the process, if indeed the application was accepted.

DR. BEANLANDS: Okay, thank you.

MR. CHAIRMAN: Would you like to make a statement, Mr. Bouckhout?

MR. BOUCKHOUT: Yes, I have just a few general comments to make. I certainly won't comment on

Mr. Romaine's brief in detail.

I would say that we do welcome the extensive comments made in the brief, and we'll certainly take them into consideration. The questions identified by Mr. Romaine's brief are certainly being confronted in pipeline planning, and many of them we are continuing to address. I think that Mr. Romaine has already indicated that some of the concerns that are presented in the brief may not in fact necessarily be relevant upon further consideration. I might say that some of them that have been mentioned, we have taken into consideration on the basis of our experience with pipelining, and on the basis of the experience of our consultants with this and other projects, and in fact, determined that they weren't relevant. There are questions you ask yourself when you are considering a project, then you must make the determination as to whether they are in fact relevant to the project given the kind of project it is, given the nature of the area, and so on.

We have already discussed many of those here. Obviously, those which are deemed relevant will be discussed in more detail in July, and we'll participate in those discussions. Many of the deficiencies noted by Mr. Romaine have and are being confronted in studies we have ongoing now, and in studies we have completed, and studies we will be conducting in future.

We realize fully, and have

mentioned it many times before that there are information deficiencies which must be filled during final design. Again, it's a point of what is required for preliminary design and feasibility and what is required for final design.

Many of the information deficiencies as I noted are being filled now by studies; our final design protection measures relative to environmental matters, will certainly be open to scrutiny by various agencies, and at that time another dialogue will take place as to whether, in fact, the design is adequate under the circumstances.

I would like to close by asking just two questions of Mr. Romaine. One being; did the people who prepared this brief have access to, and were they able to review, the reports on the field studies which we have been producing, both engineering-wise, geotechnically, and environmentally, and have been providing to this panel and other interested parties?

My second question if I can put them both to you, are rather short. Were the people who prepared the brief able to review, or did they have familiarity with other pipeline projects under construction and pipelines in operation? There are over twenty-five hundred miles of natural gas pipeline in British Columbia currently in operation, there are over five thousand miles of natural gas pipeline in Alberta currently under operation. Were they able

to, in fact, review, overfly, whatever, these systems to enable them to have perhaps a better understanding of what pipelining is all about?

MR. ROMAINE: Okay. Question number one, in terms of the amount of information that we reviewed, personally again, I'm not sure as to how much information each agency within our Department has had access to. Certainly the main submission we have had access to and has been reviewed by each agency. I am not really too clear as to all the reports that you made reference to and whether or not we do indeed have copies available. What I would suggest at this stage would be, an answer to that solution or to that question, would be for if at all possible, for us to have a listing of the reports that have been prepared since the submission and we will certainly check through and see those that we have -- those that we have reviewed, those that perhaps we have not received and we should be reviewing. So, I would like to leave that as a recommendation.

Two. In terms of the ability to review other pipelines in operation, et cetera. I think first of all the experts that we have got in the field, the people that have contributed to this review, were particularly selected on the basis of their background expertise and knowledge. Some of the questions, for example, with hydrology individuals were selected on the basis of their background, and

not on their availability. So that I think that first off the expertise was there to identify the kinds of problems whether it was a pipeline, or highway, or whatever. Two, a number of people that have contributed to this review have been involved in other pipeline exercises, and particularly the Mackenzie and I'm sure the problems associated with other ones. I think to some degree, with all due respect however, that some of the concerns with crossings or some of the other concerns that we have identified at this point again really relate to a linear proposal, and a pipeline in this case is one concern, but stream crossings do affect probably other facilities. So I don't think that it was necessary to really have detailed knowledge on every pipeline.

But nevertheless, the expertise that we have in our Department is the best that we can muster at this point in time, both in terms of knowledge of biological and environmental problems, as well as having been involved in the previous pipeline exercises.

MR. CHAIRMAN: Could I make one comment. We have, in our information room, all the materials supplied by Foothills, and a list of that information so that if you pick up that information in the information room.

MR. BOUCKHOUT: If I might just add to my comment, I certainly hope it was not taken as a facetious comment. The reason I mentioned it is both myself, our environmental consultants and so on have in trying to get

a grasp on environmentally related problems with respect to pipelines have gone out to various active pipelining spreads and operating pipelines in order to better appreciate what the inter-relationships between environmental matters and pipelines might really be.

For instance, to operating river crossings. To get a good concept of what an operating river crossing is like, or construction of a river crossing, rather. How is it put together? It does certainly help in your comprehension overall of environmentally related matters with respect to pipelines to wherever possible review existing circumstances and existing systems.

MR. CHAIRMAN: Do we have questions or comments from the floor? Further questions from the panel?

Mr. Trevor?

MR. TREVOR: Mr. Bouckhout, there were a couple of questions which I had noted earlier and didn't get a chance to address and which have been addressed in this brief we heard this morning in general terms. They relate to construction of the most northerly section of the line in the Yukon, which as I understand it from your schedule, will be noted as Spread 1, is this correct?

MR. BOUCKHOUT: I believe, Mr. Trevor, there is -- I don't know what the precise numbers of the spreads are. There are three winter spreads in total.

Mr. B. Trevor
Mr. L. Bouckhout

592.

MR. TREVOR: This is a winter spread, as I understand it. The first forty or fifty miles from the border south.

MR. BOUCKHOUT: Yes, it is. Yes, it is.

MR. TREVOR: Can you recall from your schedule the amount of ditching equipment that will be used on that spread? What I'm after is the number of miles per day that you are likely to achieve on that spread.

MR. BOUCKHOUT: Spread 1 is thirty miles in length. The construction season for spread 1 would be in the general order of mid to late January through to approximately, I suspect, mid-April, something in that order. So, we're looking at approximately three months, perhaps a bit less on that, depending on conditions, particularly the winter conditions in that particular time and so on, so, we're looking at, I guess, in the order of probably ten to fifteen miles per month, I gather, by looking at these figures.

MR. TREVOR: It is about .3 miles a day.

MR. BOUCKHOUT: Pardon me?

MR. TREVOR: That's about .3 miles a day. You would --

MR. BOUCKHOUT: Perhaps in that order -- all I'm basing my comments on, sir, are the materials

we have here which gives the length of the spread and general familiarity with the construction season. So, we're looking at in the order of half a mile a day, or less.

MR. TREVOR: Well, I was getting at this point because on the sections of the Alyeska line where ditching was required, the rate of ditching, shall we say, dropped as low as .14 miles per day under adverse conditions in wintertime. I was just seeking some thoughts from you as to whether .3 or half a mile a day was a reasonable figure to expect.

MR. BOUCKHOUT: Yes, I think so, in that order you would have certainly days where your ditching production could drop off. As you have indicated, you have other days where you could exceed your general daily production, therefore, the two tend to balance themselves out.

MR. TREVOR: My second question related to the time at which you would be able to commence, based on the data for that area, we are probably looking at an active layer, which is in the order of two feet. So, you're going to be looking at something like fifteen hundred degree days below freezing before you will be able to work on that type of terrain. Would January, do you feel, give you that length of time?

MR. BOUCKHOUT: It's our estimation that in that kind -- in that general latitude, and

in this general area, that it would, I think, be well within the range of reasonable expectation that we could begin at that time. We have for the Maple Leaf project generated or collected data on the freezing degree days and so on to estimate when we can begin winter construction in the various latitudes applicable to that project. I think from the information ---

MR. TREVOR: Well, the point I would make then, is the number of degree days in the Yukon tends to vary much more considerably than in the Mackenzie Valley.

MR. BOUCKHOUT: Yes.

MR. TREVOR: Have you indeed looked at the local climatological information to such an extent that you could accurately assess this?

MR. BOUCKHOUT: Yes, our construction department did in fact collect climatological data to determine whether in fact they could construct in that range or not.

MR. TREVOR: Thank you.

MR. CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: I have one more question to direct to Mr. Romaine.

I'm having some problem in reconciling some of the suggestions or recommendations in the report. There may not be conflict, but on page eight, showed

a general recommendation about deviations and that the pipeline should stay as close as possible to the highway, but then on page three, suggesting a thirty mile deviation to the foot of the alluvial fans along the Kluane Park, which would be inside the national park. I'm having some problems with it. I wonder if you would like to clarify that?

MR. ROMAINE: I believe, hopefully, we did discuss that a bit before in terms of my understanding of the problem, my understanding of the fact that our Department will have to review that whole question in terms of that statement, and to identify areas where that concern stands, and in areas where, perhaps, realignment would be suggested on the basis of other concerns, such as fisheries or hydrology.

I do not believe, and it may be a splitting of hairs at this stage, that there is indeed a conflict if you read the statement which basically says something to the effect that 'every effort should be made to stay as close to the highway as possible in the context of other concerns' from our Department, and I think that's the way it is intended. That is, if there were no other environmental concerns the statement would stand.

MR. CHAMBERS: Yes, that is the way I was interpreting that. But then when I did read that on page three, I do believe that thirty mile re-routing

some of it falls within the Kluane National Park. I wonder if there was a concern there from the Department?

MR. ROMAINE: As I understand it, in this case, we really haven't put the emphasis on recreation. That was to be handled by another intervenor, and that's obviously something that would have to be reconciled.

MR. CHAIRMAN: Dr. Hughes?

DR. HUGHES: Mr. Romaine, this phase of the hearing identifies, it is an issue identification phase. The panel will in the next day or two have to address the question of how to distribute time available in the July hearings for more detailed discussion of the issues identified here.

Your brief, together with that from the Yukon Game Branch, is probably the most exhaustive listing of all the concerns that may -- the environmental concerns relating to the highway. I think it's quite obvious now that we can't address in detail or exhaustively all of the issues that have been pointed out to us, and it could be very helpful to the panel if you and your colleagues could independently weight your concerns and suggest proportional what would be your assessment of -- what should be the proportional distribution of our time in the July hearings to the various concerns. This would be something which the panel and it's staff could use as a check against their assessment

of the concerns. Do you think that would be possible to get such a weighting from you?

MR. POMAINÉ: We can make every effort to do so. I think that that would be very helpful to you and to ourselves to have some type of priority on the kinds of concerns. So, to answer that, yes, we will attempt to do that.

DR. HUGHES: Thank you very much.

MR. CHAIRMAN: I wonder when that might be available?

MR. POMAINÉ: Basically what we will do is following this session, go back and we have obviously got some homework to do in terms of looking at the questions that you have asked today, and that we, or at least I have not been able to answer to your satisfaction.

I think we'll be doing that -- I would suggest that early next week. By early, I probably mean Thursday or Friday we would probably have something to you.

MR. CHAIRMAN: Thank you. Any other questions? Dr. Beanlands has one.

DR. BEANLANDS: Mr. Bouckhout, in view of the importance which you have placed on the familiarity with other pipeline operations in your discussion with Mr. Romaine, the importance for both the intervenor and the proponent, I presume that you might be willing perhaps

in the July 5th to 15th discussion period, to give us a comparison of Foothills operations with Westcoast and Alcan which you will connect up with that other end?

MR. BOUCKHOUT: Dr. Beanlands, we certainly will be -- we will have people available with experience who have experience on similar systems, for instance, Westcoast's. I only introduced it as simply one element. I didn't want to leave the impression that I was blowing it out of proportion. It's just one element in the overall matrix. The reason I introduced it, is I found myself that by looking at existing systems, it did change my mind in some respects about some of the things -- some of my pre-conceptions, for instance. That's really the only reason I mentioned it. We will be where it may be relevant discussing, and I think we have done so in the past. The experiences of such operating companies as Westcoast in similar conditions, as to how they confronted the various problem areas and so on.

DR. BEANLANDS: Would you include the Alcan operations in that? How they plan to operate on the Alaska side of the border?

MR. BOUCKHOUT: Well, the things we were discussing was experience with systems that are already operating. It wasn't my intent to include the Alaskan system, meaning the Alaskan portion of the overall gas pipeline project.

DR. BEANLANDS: Are you not familiar with the Alcan proposals, or --?

MR. BOUCKHOUT: Well, I'm familiar with the overall proposal, and I'm certainly familiar with the general location and so on. I'm not in any detail familiar with the Alcan Pipeline Company's studies and considerations. We appear to have enough to keep us busy and simply haven't had time to explore that in any detail.

DR. BEANLANDS: Do you think that, perhaps the proposed operational mode just across the Alaska border may be relevant to your operations in the first say forty to a hundred miles of the Foothills route, given the likely fact that the terrain does drastically change when it crosses the international border?

MR. BOUCKHOUT: Dr. Beanlands, as I understand it, the Alaskan section proposed operational mode is similar, it's a buried chilled line. I think I undertook earlier to attempt to get documents from our U.S. counterpart to provide to the Inquiry, and we're looking into that now.

DR. BEANLANDS: That's fine.
Thank you.

DR. SCHILDER: Mr. Chairman, I have a question for the proponent. Referring to the intervenor's concern, my question is what investigations or studies have

been carried out, or are planned, to evaluate the potential impact of glacial outburst floods on the White, Donjek, Duke and Slims Rivers?

MR. BOUCKHOUT: I am not personally aware, Dr. Schilder, of any specific studies that have been carried out or planned. I think I indicated earlier that in designing such river crossings, in particular the White and Donjek, that drilling -- very detailed drilling is undertaken in order to assess scour in those areas which obviously results from such things as release of water from glaciers, release of water from snow melt, rainstorm events, and so on.

I might add that I believe we have provided the panel with a report on that particular topic, scour prediction for the White and Donjek. I believe we have provided the panel with documents which provides the drill hole logs which are appropriate. Since scour prediction is an integral part of the overall design, and the design is very relevant to the anticipated events at the crossing, and those events, of course, are related to what might happen upstream from the crossing.

I'm not trying to evade your question, I'm trying to indicate how one goes about confronting design on a crossing such as the White or Donjek which takes into account events such as you mentioned.

DR. SCHILDER: Mr. Chairman, I

have a following question for the applicant. Referring to your specific study carried out by Unis of Winnipeg on major river crossings, do you plan on implementing your consultants recommendations? Are these studies already carried out, or are these studies made out?

MR. BOUCKHOUT: There is certainly more site-specific study required. The results of the Unis' Study, and again we're particularly talking about scour prediction on the White and Donjek, for instance, have given us, I think, a good indication of the conditions and the construction related criteria that would be applicable. For instance, when one evaluates the scour prediction prepared by Unis for those two particular crossings, it indicates that we must be looking at quite deep depth of burial in order to accommodate the considerable scour which is relevant to those two particular crossings.

Certainly, we will implement the recommendations, but the recommendations will be further evaluated and certainly more detailed design is required before we proceed with construction at those crossings.

DR. SCHILDER: Does the applicant also plan on developing hydrologic and scour data for all river crossings which have been designated within your proposal as major?

MR. BOUCKHOUT: Yes, sir. It's my understanding that will be done for all major river crossings

DR. SCHILDER: Referring to the intervenor's concerns, I have a question for the intervenor.

Would you consider in connection with your concerns, that the criteria for major river crossings as are provided in detail within the application are sufficient to satisfy your concerns?

MR. ROMAINE: The question is, did we consider the criteria?

DR. SCHILDER: Yes.

MR. ROMAINE: I can't --

DR. SCHILDER: I'm referring to certain implications concerning timing and further more detailed design and specific precautions?

MR. ROMAINE: I can't answer that at this stage, but again, we'll bring that forward.

DR. SCHILDER: Thank you.

MR. CHAIRMAN: Would you like to sum up as a conclusion of discussion on your brief?

MR. ROMAINE: Not necessarily a sum up, Mr. Chairman, but I would like to make three sort of summary comments and ask a point for clarification.

Basically, to make three points: in terms of the summary of concern, those are the ones that our Department has identified at this time. Some may be dropped, others may be modified, some may be more detailed.

Others may be added. Particularly on the alternatives in the July session.

Two, that the questions that were not answered sufficiently here, will be taken under advisement, and we will attempt to get clarification as much as possible on those.

Three, At the July sessions, we will have experts available to cover these subject areas. I believe that since one of the points, and it's the one I wished to raise a clarification on, but one of the points that raised a fair amount of interest this morning, dealt with the right-of-way. I would suggest that our position on it at this time should be considered within the context and the intent in which it was presented.

The point that I would like to seek clarification on, partly arose out of the discussion on the right-of-way, and partly on behalf of the request made by Dr. Hughes respecting the possibility of our Department to sort of identify priority areas of concern. The question is, or the question of clarification basically, is that I am not clear at this stage as to what the panel is really expecting or requesting from our Department for the July session.

To give you an example on the whole question of right-of-way, are you looking for a Departmental position on a proposed routing of the line?

MR. CHAIRMAN: Okay, in answer to that, we are now considering the major issues which we would like to address in a lot more depth in July. We wish to receive advice from whoever wishes to advise us, on those major issues, and if the Department of Fisheries and Environment wishes to advise us, we would certainly welcome your participation.

Whether or not that is a Departmental position or you send an expert to advise us, that's entirely up to you. We would have -- I personally would have no feeling. We, of course, are not evaluating the -- from where the advice comes; we are evaluating the advice and putting it into our own context of how we will form our conclusions and evaluations.

We, right now, I can't tell you exactly what will be discussed on what days, unfortunately, because we are still hearing concerns in this session, but we hope to have a list published by mid-week, next week. Certainly we are flexible to a certain degree, and we can -- would be able to add concerns to a limited extent. If the panel felt they really would wish to consider those concerns in July if you put a lot of weight on some concerns that we hadn't on the list, then we would probably reconsider and see if we could, in fact, squeeze that concern in.

MR. ROMAIN: Let me just pursue the right-of-way question for a minute, because it

obviously has an influence on the degree of effort we have to put into it at this stage. To give you an example of one of the so-called conflicts that have been identified this morning, was the recommendation under vegetation section of our concerns respecting the right-of-way close to the highway where possible. It was also identified in another area where the line should be re-routed because of hydrological concerns away from the existing alignment. A third point being raised was what that would do to concerns respecting recreation. Now it's one thing for our Department to document perhaps the rationale for route changes from a particular point of view, i.e. hydrological, but it's another thing, if, as I sort of understood the thrust of the discussion this morning, if our Department basically is to say that for this section of line, this is what we would suggest as the route merging our concerns from a hydrologic, fisheries, vegetation, and possibly a recreational point of view. What I'm really getting at here is that there is a difference on who does the synthesis and integration. It would be much simpler for us, if you are after expert input, to say look for a particular section of the line the problem is hydrologic. Whether or not there is a conflict with recreation, or with wildlife, or with anything else, is up to the panel to decide; versus the other one, where we say all right, we would suggest a re-routing here or something, based on the combined assessment of the environmental impacts.

MR. CHAIRMAN: Well, certainly the panel must decide on their conclusions of which are the major environmental impacts and how they should be treated, and in so doing they will consider all of the factors on a particular section or a particular topic. So, we also of course, would accept advice from anyone on which concerns those people consider to be the most important.

I believe the question from Dr. Hughes was, would you be willing to prioritize your concerns. As I understand your concern is that it's difficult for you to do within the timeframe that we obviously need this advice quickly in order to schedule our hearings in July.

So, we certainly would appreciate the advice of the individual expertise in the July hearings, whether or not the Department as a whole has prioritized the particular concerns. Our major concern is to get the basic information on which to make up our own conclusions.

MR. ROMAINE: Thank you.

MR. CHAIRMAN: Okay, I would like to adjourn and we'll meet, can we in fact meet in fifty-five minutes? I guess we can. We will adjourn until one thirty.

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: This first brief this -- oh, no. Mr. Bouckhout has a statement to make before we begin.

MR. BOUCKHOUT: Just a couple of comments, Dr. Hill, in regards to an earlier requested received from yourself regarding projects which may be under way on existing systems, which you may have the opportunity to view.

With respect to the Alberta Gas TrunkLine system, there is really very little construction currently under way or planned in the immediate future, which would be appropriate. I have discussed this also with Westcoast Transmission, and following are some points which may be relevant, some activities which may be relevant, their timing might be a bit difficult for yourself and your panel.

With regard to major river crossings, Westcoast will be constructing a crossing of the Peace River. This will be a thirty-six inch line. They will be in the field some time in early July to begin construction of this crossing.

With respect to mainline construction, there will be some mainline construction in the Fort St. John area in northern British Columbia, approximately twenty-three miles of mainline construction which will start

about mid-July. There is currently construction of a compressor station being undertaken at Taylor, which is near Fort St. John. In speaking to Westcoast, they would certainly welcome the opportunity to show you these various projects if you are able to, in your own very busy schedule make time to do so, they will certainly provide the logistic support to have you view the construction, river crossing construction, compression station, or mainline. With regard to existing systems, of course, the time constraints certainly are not there in similar context.

If you and your panel were to wish to have an opportunity to view existing rights-of-way in northern British Columbia, or wherever, but particularly in northern British Columbia, which is most appropriate, to the proposed Yukon route, then certainly we would undertake to schedule that for you as well and make the opportunity available for you to view existing rights-of-way in permafrost areas for instance. There are many lines in northeastern British Columbia which might be applicable and appropriate for you to view. If you so desire, you can let us know and we'll try and make the appropriate arrangements.

MR. CHAIRMAN: Thank you very much.

Excuse me, Mr. Chambers is asking whether the Peace Crossing is a buried crossing?

MR. BOUCKHOUT: Yes, I believe

it will be. It's my understanding that it will be.

MR. CHAIRMAN: Our first brief this afternoon is from Doug Bell, representing the City of Whitehorse. Yes, please. A word of explanation on procedures. We ask the intervenor to give his brief and we ask the panel if they have any questions of clarification, and we ask our staff if they have any questions, and we ask Foothills if they would like to make a statement, and then we ask the audience if they have any questions.

MR. BELL: And I am supposed to have the answers.

MR. CHAIRMAN: It would be nice.

MR. BELL: Okay, gentlemen. I would like to add my welcome to Whitehorse to those that you have probably already received, and we hope you are enjoying your stay here.

Environmental concerns of the City of Whitehorse with respect to the proposed natural gas pipeline are as follows:

In presenting these concerns, we have made the following assumptions, first; the pipeline will be buried throughout that portion that traverses the municipality; that prerogative controls will be established and applied by the appropriate and responsible authorities; that there will be an influx of people, placing excessive demands upon our existing facilities and creating many

pollution problems; that time and expertise will be provided the City for planning and preparation before construction begins, and; that the City will be involved in all planning affecting the municipality; that further input will be allowed at any time as more information becomes available that might change existing positions or ideas; that extraordinary funding and specialized assistance will be made available to the municipality for the preliminary planning. Our expertise and our funding is obviously limited, or non-existent in some of the areas we are expected to encounter.

The more we study pipeline concerns and effects, the more we become convinced that one controlling body should be established that will have complete jurisdiction and authority over all aspects of any pipeline construction. The objective of this suggestion is to provide the essential ingredients of an on-the-spot decision-making body with the authority to ensure that all rules, regulations, and agreements are adhered to by all parties. The body would have specialities in all phases within its authority. (That is, social, financial, economic, and environmental)

The Yukon River Valley; Fish Lake, Schwatka Lake, and others feeding the system are one of our prime concerns, since these represent our water sources. They must be totally protected at all times and at all costs.

We have been told that we have the best quality water on the continent, and we want to ensure that it remains at that same level of quality and purity.

Our prime environmental concern revolves around people. We do not think that the numbers we can expect can be estimated with any degree of accuracy, but we expect that as the numbers increase, so will our problems. It has been suggested that the applicant can contain construction workers in their camps. Perhaps they can contain some of the workers some of the time, but we do not feel that they can contain all of the workers all of the time. We know that they cannot control the influx of families, friends, tourists, and camp followers, and therein lies our dilemma. We can only guesstimate. We see this people proliferation manifesting itself with consequent problems noted below:

Campground overloading,
Squatting and other indiscriminate
land use,

Recreational vehicle and trailer
proliferation and resultant waste disposal problems,

Solid waste and litter control
will increase,

Greater demands will be placed
upon our water supply and the risk of upstream pollution,

More people will simply place a

heavier demand upon all our municipal services and resources. In some cases, overloading and overuse of facilities will precipitate breakdowns, resulting in higher maintenance and people costs, requiring more funds to maintain an adequate level of service. Our existing taxpayer must not be burdened with these extraordinary costs.

Waste disposal,
Garbage and other solid waster disposal,

Sewage and other effluence,
Vehicular solid and liquid waste,

Abandoned machinery and vehicles,

Forest debris and it's disposal.

All of these will produce problems, but we do not know how much, yet they are one of our concerns.

Roads and associated aspects. As few roads as possible should be developed, and those that are, should be accessable only to authorized personnel. Proper ditching and drainage should be mandatory upon those used to prevent subsequent surface erosion. No pioneering road should be allowed without prior consultation and authority. Where possible, new roads developed should be in consultation and co-ordinated with the City's general development plan in order

that they might be used at a later date.

Survey lines should be left clean and clear. Borrow pits in existence should not be used, and those that are developed should be made available to the City following construction. Good gravel deposits discovered or opened should not be used for common backfill, and should be identified for future use.

Any clearing done should be monitored to ensure that any possible soil erosion will be minimized.

Restoration of any existing roads used to equal or better standards than they are now.

Recreational and all other terrain vehicles should be refused access to pipeline areas and necessary fencing or restrictive measures should be mandatory.

Restoration, revegetation and clean-up phases. We would hope we could have complete and total clean-up of all sites and work areas. Restoration to equal or better standards of all roads and other municipal facilities used.

Subsequent erosion or other problems developing after all restoration work has been done that can be directly attributed to the construction should be included in any agreement.

Question. Who will determine the

need and the method and the degree or amount of restoration required, and who will audit the result? Consideration should be given and plans made to restore and reserve some areas into recreation and park.

Special and emergency concerns.

Accidental fires, we have several questions, who responds? Will trained staff be provided? Will Forestry respond to forest fires within our area?

If a compressor station is planned within the municipality, it's location will be an important consideration from the viewpoint of noise pollution, the possible production of ice fog and the consequent hazard this might produce for the airport operations.

Animals and birds attracted by the proliferation of garbage could become a hazard for people generally, and with the possibility of birds becoming a hazard to aircraft.

Storage of fuel and toxic materials is another important concern, especially with respect to our water supply.

We have some general questions, and we do not have the answers. What environmental legislation governs work in the City? Will an environmental impact study be made? If yes, who will commission and fund it? Who will be responsible for inspection and audit of the project and how will surveillance be carried out? Will all

stream and other water aspects by covered by the Inland Waters Act? Will access roads locations be co-ordinated with the City?

That, gentlemen, is briefly the concerns of the City of Whitehorse at this time. I would like to thank you for the opportunity to present them to you.

MR. CHAIRMAN: Thank you. Are there questions from the panel? Mr. Chambers?

MR. CHAMBERS: I would like to ask, Mr. Bell, you made one statement on the campsites. Is there a particular concern with the proponents proposed camp site on the Fish Lake road? Is this what he's referring to in general, or is it generally the immigration of people in the Yukon?

MR. BELL: The immigration of people was our main concern, because we felt that there would be, well we've had past history of squatting anywhere and everywhere, and we think that that would continue.

MR. TREVOR: Mr. Bell, in preparing this brief, were you aware that some re-routing of the proposed pipeline is being looked at by the applicant in the Whitehorse area, and that one of those routes indeed would bring it down and run it along behind the present City dump and behind Valleyview and on down? Does this closer routing to the core of the City present problems as far as the City is concerned?

MR. BELL: We weren't certain of the route, Mr. Trevor, but this would certainly produce some concerns. Especially since it's between Fish Lake and the City on the downstream side and Fish Lake I think will eventually become one of our water sources.

MR. TREVOR: In general, would it be the preference of the City to keep the pipeline as far away from the busy areas as possible, or in terms of getting gas into Whitehorse, would you prefer to see it closer?

MR. BELL: May we have a great consultation on that? We really haven't

MR. TREVOR: That's an unfair question. Let's approach it from another angle. There has been a fair amount of evidence before this panel that it's preferable for the pipeline route to stay as close as possible to the Alaska Highway. Whitehorse is one of the areas where at present, there's quite a deviation from that route. What would be your views on that statement that the pipeline should stay quite close to the road?

MR. BELL: I think it would present quite a few problems within the municipality, because we have development all along the highway, right through the City.

MR. TREVOR: So that, really, in terms of of a City, like Whitehorse, it would indeed be preferable to stay away from the road to quite a degree.

Mr. D. Bell
Mr. E. Trevor
Mr. C. Wykes

616

MR. BELL: I would think so.

MR. TREVOR: Because of the
conflict with present usage.

MR. BELL: That's right.

MR. CHAIRMAN: Mr. Wykes?

MR. WYKES: Mr. Bell, in your
brief you express some concern because the increased number
of people that might be in the Whitehorse area. The drinking
water supplies that now exist and could exist in the future.
I'm wondering, just for the panel's interest, whether you
could outline to us the controls that the City now has in
place to protect those water supplies, or if there aren't
any, whether or not they are contemplating any, and I guess
whether or not they are -- they can actually implement
those controls?

MR. BELL: At the moment, there
aren't any. They have been discussed, but as someone pointed
out at one Planning Board meeting, we would have to build a
fence from here to the end of Ben-My-Chree to protect our
water shed, so it becomes a very difficult problem. The
whole source of the system extends back that far, and that's
our understanding of it anyway.

MR. WYKES: There are means of
protection, other than building fences. I'm just wondering
if the City had given any thought to the protection of those
water supplies by some kind of controls on the use of those

Mr. C. Wykes
Mr. D. Bell
Mr. L. Chambers

617

water sources.

MR. BELL: Yes, that's being looked at, definitely, as well as the restricting the use of these various facilities. But, there's no positive action been taken yet at this stage. It's definitely being considered all the time. It's a recurring theme.

MR. WYKES: Thank you.

MR. CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: Just following up on Mr. Wykes question on that. Is the City contemplating a water supply from Fish Lake. There was some concern expressed in your submission as to the future possibility or the future use of Fish Lake as a water supply. Is this being contemplated by the City?

MR. BELL: Not in any direct manner, but it's always kept in the background that if we do need an immediate source of fresh water that it would -- Fish Lake is always brought forward as the first one that might be a good possible source.

MR. CHAMBERS: I suppose the reason for that is a contingency plan if your existing supply of Schwatka Lake was polluted in some form, but as a backup contingency water supply for your City.

MR. BELL: Yes, that was the thinking. It's sort of in an on the shelf position.

MR. CHAIRMAN: Basically, one of

your concerns is that the, as I understand it, is the load put on the City because of the need for sewage treatment, water supply, and other facilities, would be such that the City would not be able to respond and construct these without outside financial assistance. You are not very specific, I see, in where you think that assistance should come from.

MR. BELL: Because we don't know where to get it. Nobody's coming forward and saying, hey, hey --

MR. CHAIRMAN: But you see this as an emergency situation with a three year life period and then basically reverting to the status quo again?

MR. BELL: No, I think we would be thinking incorrectly to think that way. I think that the after-effects we can't really determine. But I think that there are going to be some heavier loads placed upon municipal facilities; couldn't produce requirements far beyond the three year period or any time frame of the construction phase. We feel that the post-pipeline period, and this is a fairly general area, -- a general statement I would have to make, but we feel that the post-pipeline period is probably the most important one to us in that that's when everybody pulls out and we are left with whatever is left, and it could be a considerable -- you know, we could have, for example, breakdown in -- well let's say, keeping it environmentally if I could think of one perhaps, where the line goes through, considerable

erosion, and certain areas of the City which could give us problems. I just can't come up with any specifics because it's one of those gray areas that we really don't know, but we feel very strongly that the post-pipeline period is the one that's going to hurt us the most. We feel that we can get through the pre-pipeline, the planning stage, and the pipeline itself, because it's been done before in this part of the world, with the Alaska Highway and the gold rush and so on. But afterwards, if we're saddled with heavy costs or heavier costs to maintain our municipal services for any reason, and our population doesn't increase too much, then that will be an after effect of the line that won't be too good for any of us.

MR. CHAIRMAN: You mentioned the-- put it in question form, actually, what legislation is applicable? Could you inform us what the state of enforcement of environmental ordinances is within the City of Whitehorse?

MR. BELL: I can't offhand. Perhaps the Mayor can? Can you answer that?

MAYOR CHRISTENSEN: At the present time, it's my understanding that we, through our Bylaw Enforcement through the Territorial Government, work with the Environmental Protection Services on the enforcement of these. We don't have bylaws as such.

MR. CHAIRMAN: So, the actual laws being enforced are -- they aren't bylaws of the City of

Whitehorse?

MAYOR CHRISTENSEN: Well, perhaps you could be more specific?

MR. BELL: Litter Bylaws.

MAYOR CHRISTENSEN: Litter Bylaws, certainly.

MR. CHAIRMAN: Oh, I see. We're talking about the environmental disruption that the pipeline might cause and the question was what legislation would apply and I'm asking the question -- being unfamiliar with the City of Whitehorse and how it operates, my question is how are the environmental laws -- what are they and how are they being enforced now within the City of Whitehorse?

MAYOR CHRISTENSEN: Well, it certainly is split at a tri-level, because the City is responsible for the developed areas. The Territorial Government owns all of the land and is responsible for maintenance, supervision and policing of those lands that are outside of developed areas at the present time, and they work through with the Federal Government where environmental protection concerns are. As to the litter concerns, the Territory is supposed to be supervising those with the assistance of the City, but you really have the three levels of government all working within the City under the legislation.

MR. CHAIRMAN: Thank you.

Mr. Wykes?

MR. WYKES: I suspect that you are aware on the Foothills application that there is a construction camp, I believe, up in the Louise Lake area, shown on the alignment sheets. I'd like some clarification as to whether or not that MacIntyre water supply is still being used by parts of the City, and in particular Porter Creek, or not. Because I believe that's the drainage that comes out of that area.

MAYOR CHRISTENSEN: MacIntyre Creek water is not used at the present time.

MR. WYKES: Is it still in a state that it could be used. Do you anticipate having to use that at any time to supplement the water supply to Porter Creek?

MAYOR CHRISTENSEN: In an emergency situation, pumps could be put in, but they cannot be just automatically switched over and turned on from the MacIntyre Creek. That has been disconnected. There would have to be a connection made up at the Porter Creek pumphouse. It could be done in a very short period of time as an emergency situation. We certainly are not anticipating ever having to use that, because of the new reservoir being put in at Porter Creek. The capacity now is as adequate to handle any eventuality in Porter Creek.

But the Fish Lake, as pointed out

Mayor I. Christensen
Mr. C. Wykes
Dr. O. Hughes
Mr. D. Bell

622

by Alderman Bell, is a potential that we are looking at in the future. The draw down there would not support a community of any more than about fifteen to twenty thousand, and your winter -- there's no feed in the winter up there so that you could perhaps have an alternate of using Fish Lake in the summer when you have your high waters and not using Schwatka when it's being used for recreational purposes and switch it in the winter when you have low water in Fish Lake and when the river system is frozen over and you have more control over what is going into it. This is a possibility, it's certainly in the long term.

MR. WYKES: Thank you.

MR. CHAIRMAN: Do you have a question?

DR. HUGHES: Is there an official plan for the City of Whitehorse that shows -- you see, I'm not familiar with where the boundaries are for the City of Whitehorse, what the projected expansions are.

MR. BELL: We have a general development plan which was just completed last year and we would be only too happy to let you have a copy if it would help. It's -- we adopted it just last August, so it's recent.

DR. HUGHES: I think that could be helpful. Some of our staff are looking at the proposed change in the alignment suggested in general terms by Foothills

Dr. O. Huches
Mayor I. Christensen
Mr. L. Chambers
Mr. D. Bell

623

and I think in looking at that they should have a feeling for where the boundaries are, any future projections that the boundaries of the City of Whitehorse --

MAYOR CHRISTENSEN: We're not projecting any expansion of the boundaries or anything. We have 162 square miles, and we feel that that's quite adequate.

MR. CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: I believe you made some statement on aggregate use or gravel use within the City, but I'm not sure that I got it correctly. Were you recommending that no -- if there is a need for aggregate material for pipeline construction, that those existing deposits within this City be reserved for future City use and not be allowed -- or not allow the applicant to utilize them?

MR. BELL: That's right. That was one of the recommendations; the second being that if they did find other good gravel deposits they would not use it for common backfill, but if it was of higher quality to allow the City to -- or pinpoint it for the City for future use and so on.

MR. CHAMBERS: If the applicant goes along with one or other of the alternatives, rather than the Ibex Pass proposal as it now stands, would this also apply to aggregate deposits on the periphery on those

Mr. L. Chambers
Mr. D. Bell
Mr. B. Trevor
Mayor Christensen

624

alternate routes around the City? Or are you just concerned within the City boundary?

MR. BELL: We've just contained ourselves within the boundaries themselves.

MR. TREVOR: Supplementary to that in the sense that this position of gravel within the City is controlled by the Territorial Government, what degree of consultation exists at the moment between the Territorial Government and the City for the disposal of gravel within the City area? Now, I'm talking about the whole City area, not just immediately adjacent to Whitehorse.

MAYOR CHRISTENSEN: There has been consultation over the last year, in fact, in trying to revive -- not revive, in fact create policy. The Territorial Government has been doing this in consultation with the City to close the pits that are no longer in full use and to try to isolate it to one or two actual working pits.

MR. TREVOR: Is it likely then that the Federal Government would be willing to transfer full control to the City within the boundaries of the City of Whitehorse?

MAYOR CHRISTENSEN: I believe that if title were given, the City would perhaps be interested in this providing that we were able to collect the revenues from it.

MR. TREVOR: I wasn't thinking

Mr. B. Trevor
Mayor I. Christensen
Mr. C. Wykes
Mr. D. Bell

625

so much as title to anything, but you will be able to decide who and where exploitation should take place in terms of the gravel pits?

MAYOR CHRISTENSEN: Certainly that is happening now, it hasn't in the past, but it certainly has --

MR. TREVOR: You have the power to veto now, in a sense?

MAYOR CHRISTENSEN: Well, through our Planning Board and working with the Department of Local Government, we make recommendations and the co-operation has been extremely good.

MR. CHAIRMAN: Mr. Wykes?

MR. WYKES: I wonder if you would just explain to me your rationale for suggesting that any access roads that might be opened up by the proponent be sealed in terms of access by the public? Your rationale behind making that suggestion?

MR. BELL: Well, I think probably with the experience that anybody -- when a road opens up it becomes used by four wheel drive vehicles, first, and the damage that's resulted to some areas of the City already as a result of this, and you know in the natural areas has been pretty significant, and we would like to stop that type of damage.

MAYOR CHRISTENSEN: Perhaps further

Mayor I. Christensen
Mr. B. Trevor
Mr. D. Bell
Dr. O. Hughes

626

1 to that, it also creates policing problems in controlling
2 camping areas, fire control, and litter pollution, whatever,
3 we have to put out garbage pails on every road that's created
4 and then pick them up on a regular basis puts an additional
5 burden. If these can be controlled then it certainly helps.

6 MR. TREVOR: Especially on the
right-of-way south surely we could look upon it as a new
8 cross-country ski trail. You would have no objection to
9 that?

10 MR. BELL: That's was in fact
11 one suggestion in there is parks and recreation areas, and
12 that was one consideration, yes.

13 DR. HUGHES: Did you have some
14 specific proposals as to how you could keep recreational
15 vehicles off the right-of-way? Is it a point that keeps
16 coming up, and yet no one seems to have a specific proposal
17 as to how you can keep recreational vehicles off any kind of
18 opening.

19 Now, as a resident of Alberta,
20 I'm well aware of the problems of keeping people off the
21 seismic lines, for instance. The owners of these vehicles
22 show amazing ingenuity in getting around any obstacles that
23 are placed on them.

24 MR. BELL: I think that's the
25 name of the game, they figure the tougher the obstacle, the
26 more they must tackle it.

Dr. O. Hughes
Mayor I. Christensen
Dr. D. Bell

627

1 DR. HUGHES: It is part of
2 the game, surely.

3 MAYOR CHRISTENSEN: Certainly
4 we have found though that in areas, we have three areas
5 within the City that are put under bylaw protection --
6 protected areas, and we find where these are kept well
7 posted, that 99 per cent of the persons using recreation
8 vehicles, whether their motorcycles or their four wheel
9 drives, do respect this. You have a percentage that doesn't.
10 With surveillance by persons in that area, and bylaw
11 enforcement you have reasonable control, not a hundred per
12 cent control.

13 DR. BELL: And we are still small
14 enough that public appeals and meetings with a few of the
15 groups are still very productive and they do co-operate,
16 you know, the groups co-operate. Especially the clubs, they
17 organize groups and co-operate one hundred per cent with us
18 in this area. It will, as we grow, I'm sure, become a greater
19 problem, but at the moment with requests to people and
20 you know, approaching them with common sense it's been very
21 effective.

22 DR. HUGHES: Thank you.

23 MR. CHAIRMAN: You asked a
24 question about legislation and I won't hazard to try to
25 answer it, because of course, the answer is involved in
26 which government has the right to legislate inter-provincial

1 inter-country pipelines, and I'm no lawyer and I have asked
2 the question and listened for half a day, so I can't really
3 tell you. But I know that the main legislation which --
4 under which controls will be established is the National
5 Energy Board Act and the Territorial Lands Act of the
6 Federal Government.

7 The staff -- you do have any
8 questions? Dr. Schilder?

9 DR. SCHILDER: Mr. Bell, it
10 is my understanding that the City of Whitehorse has a
11 certain parcel of land under it's jurisdiction, or perhaps
12 to be precise, there is a parcel of land which is under the
13 jurisdiction of the Commissioner of the Yukon Territory and
14 while probably the rest of the line is almost exclusive
15 under the Federal jurisdictions under the Minister of Indian
16 and Northern Affairs, do you have any preference on the
17 proposed pipeline route near Whitehorse in connection with
18 any of your existing or potential interests?

19 MR. BELL: We simply haven't --
20 actually, maybe I could just step back one step. Dr. Hill's --
21 it may be a small digresion, but Dr. Hill's comments about
22 that question we had about legislation and your question
23 present the dilemma that we are in, in that we have no basic
24 expertise in all of these, we've now been hit by the National
25 Energy Board, the Lysyk Inquiry and yourselves, and the
26 expertise that we are working with is probably seated at this

Mr. D. Bell
Dr. V. Schilder
Mr. L. Bouckhout

629

1 table, and none of us are experts in this business. So, the
2 routes that have been proposed, we are aware of them, but we
3 certainly aren't aware of the minute detail or the land that
4 they are going to cross. So, I wouldn't want to answer
5 that by saying any preference, giving you any preference.
6 But it certainly is one of our considerations, once it's
7 established that's I think it's somewhere in here, we
8 said that once the route is established, we would like to
9 be consulted again, so that we could then, if necessary,
10 hire consultants or experts or someone to oblige us and say
11 this is the way we recommend you should go, so that we could
12 then make a decision at the municipal level.

13 DR. SCHILDER: Has any effort
14 been carried out between the City and the proponent to rule out a
15 potential conflict?

16 MR. BELL: We are -- we haven't
17 had any or too many meetings, but we have plans to have some,
18 yes.

19 DR. SCHILDER: Thank you.

20 MR. CHAIRMAN: Any other staff
21 questions? Would you like to make a statement Mr. Bouckhout?

22 MR. BOUCKHOUT: Just a very
23 brief comment that the brief presented obviously points out
24 the implications of looking at alternatives. What's really
25 necessary is to evaluate the concerns on the relevant
26 alternatives. In one case they may be biological; in another

1 case they may be land use related, and it's necessary in
2 doing so that the co-ordination and co-operation between
3 ourselves and the City officials, for instance, is undertaken
4 at an early stage and I think as the gentleman already
5 expressed, there are plans for meetings, some of our people
6 have already in fact discussed in a very -- quite a general
7 level, the alternatives and the implications of the alterna-
8 tives and will certainly continue to do so.

9 MR. CHAIRMAN: Okay. Are there
10 any comments or questions from the floor?

11 I'd like to also attempt an
12 answer to another one of your questions. The question was
13 will that further impact study be carried out, and how our
14 terms of reference, at the time we're appointed to carry out
15 an environmental review of the project which implies a
16 complete review, and the government has asked us to report
17 to them by August 1st, and they called it an interim report
18 and it further stated in the press release that was given out
19 when we were established, that the -- after September 1st, if
20 the pipeline route is presently proposed is still a
21 contender, then the environmental assessment procedure would
22 continue. Now, exactly what form it will continue in will
23 depend on, of course, a lot of things; what our report says,
24 among other things.

25 Yes?

26 MS. KERR: My name is Ann Kerr.

Ms. A. Kerr
Mr. D. Bell
Mayor I. Christensen

631

Mr. Bell, I would just like to ask you, I understand that the Jackson Lake area is quite a recreational area for the Whitehorse community, and if you foresee any potential conflict with the location of a construction camp nearby?

MR. BELL: I don't see any problems, if the camp is at the lower level. Jackson is what -- it's about ten miles up and the proposed camp is I think about two miles from the beginning of the road, somewhere in that neighborhood. It might produce some, certainly, traffic problems for people going to Jackson Lake, but I don't think it would have too much affect. That's only my personal estimation.

MR. CHAIRMAN: Out of interest, the map that was supplied to us by Mr. Bouckhout on the possible alternatives in the Whitehorse area is on the -- pasted on the board over here. Have you -- are you familiar with the alternatives? I'm told that Mr. Wright, our next intervenor, is held up in a meeting and he's not here yet, so maybe you would like to have a look at some of the alternatives and if you wish to offer comment, we'd be happy to receive them.

MAYOR CHRISTENSEN: That's just speaking on alternatives, depending on the type of tax revenues the City might be able to realize from a pipeline coming through the City we would certainly look at it more

favourable than perhaps if it was going around the City and we weren't able to derive anything. This would have a very big bearing on where we would like to see it.

MR. CHAIRMAN: I'm not an expert on taxes maybe Mr. Bouckhout is. I don't know whether the City of Whitehorse could claim taxes from a pipeline if it traversed the City?

MR. BOUCKHOUT: I'm certainly not an expert on taxes either, Dr. Hill, but I fully realize that that might be one of the implications which would have to be weighed in the consideration of the alternatives.

MR. CHAIRMAN: Just to further explain our procedure from hereon, in July, the panel is going to meet and we're going to focus on particular issues that we feel we need much more information on before we can make any recommendations to the Government on the route. One of the areas that has come up for a lot of discussion is the Ibex Pass area and, of course, there are -- we've heard the one side of it. The implications to wildlife if the pipeline, the potential implications to wildlife, if the pipeline crossed the Ibex Pass, but we haven't heard anything of the other alternatives, of course, because they weren't proposed in the original application.

In making up our minds in looking at the Ibex as an issue in July, we would certainly appreciate your comments on the lines on that map.

Mr. Bouckhout?

MR. BOUCKHOUT: I was just going to say that since Ms. Christensen and Mr. Bell weren't party to some of the earlier discussions on these routes that they are very general possibilities that would possibly provide a mechanism as an alternative to the Ibex Pass to get from one side of Whitehorse to the other.

MR. CHAIRMAN: We'll take a five minute break.

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: Thank you for having a look at the map. I don't wish to put you on a spot to judge the merits of the different possibilities but what I would like is an expression from you with regard to our decision, whether or not to look into this issue in much greater depth in our July series of hearings?

MR. BELL: The route that I would pick is the one right behind Porter Creek, if I'm going to, you know, if I could give you the reasons that I've come up with in the last couple of minutes. I really don't see that I would change my mind. The route -- that particular route follows the Whitehorse Copper Mine road pretty well, which means that that area has already been partially developed so the damage or environmental impact or damage would be minimized, it would allow fairly easy access to tapping off

Mr. D. Bell
Mr. L. Bouckhout
Mayor I. Christensen

634

gas towards the City. The other route on the other side of the river would entail a river crossing and add cost to it, and would also break through some, I suppose you could say wilderness areas on the -- in the eastern portion of the City boundaries. I just can't see anything negative about it. We could even get some positive effects from that particular location.

The Ibex route, I know that part of the country, I've been in there, and I would just from a personal point of view prefer it to stay as it is.

MR. CHAIRMAN: Any comment,
Mr. Bouckhout?

MR. BOUCKHOUT: No, not at this time. As we said, that is one that is being considered and we will certainly take Mr. Bell's comments into consideration.

MR. CHAIRMAN: Thank you.

Do you have any sum up statements which you would like to make after you've heard the questions and Mr. Bouckhout's comments, and so on?

MR. BELL: No, I don't think I have. Do you have anything you'd like to say?

MAYOR CHRISTENSEN: I don't believe any definite statements, other than perhaps we could all basically to get down to working on the problems and finding some of the answers and spend less time on appearing for inquiries, we might all get a lot further.

MR. CHAIRMAN: Thank you very much.

I would like to thank you both very much for appearing in front of us today.

The next brief is from the-- on recreational land use from the Government of the Yukon Territory. I understand that Mr. Al Wright is not here, but there is someone here who would read the brief, and that Mr. Wright will be here in order to answer the questions on the brief.

Possibly we could have the brief read into the record, and then we'll break and have a cup of coffee if Mr. Al Wright is not here.

MS. HORWOOD: Mr. Chairman, if we can get in touch with Mr. Wright before three o'clock, he'll be encouraged to get here as quickly as possible.

I'll just go ahead and read the brief then.

MR. CHAIRMAN: Could you identify yourself.

MS. HORWOOD: Oh, I'm Denise Horwood, I work for Al, for the Y.T.G. Okay. This is going to sound funny because it says right at the first sentence my name is Al Wright. Anyway -- .

My name is Al Wright, and at present I am Pipeline Co-ordinator for the Government of the

Yukon Territory, and I am appearing before you today to outline to you very briefly some of the concerns of the Parks and Historic Sites Division of this government regarding the pipeline. I am here by default, because the staff of this Division is small, and this is one of the busiest times of the all too brief Yukon field season. If you will hold your sessions in the summer you must take the consequences - in this case, me!

One of the reasons that my comments are brief is because of lack of base-line information and field evaluation, the gathering of which has been hampered to date by limited budgets, and a consequent lack of staff. Hopefully, we may have more detailed input for you by the time of your further sessions in July; meanwhile, I pass on the following concerns:

Campgrounds.

(1) The present proposed alignment passes directly through three major campgrounds, that's Pine Creek at milepost 1013, Morley River at milepost 777, and Big Creek at milepost 674. We are currently expanding Big Creek Campground. There are no provisions to relocate these sites nor have alternate areas been identified.

(2) The proposed route also passes through or over a proposed boat launch site at the McClintock River crossing.

(3) The proposed route passes

within one-half a mile of at least seven other campgrounds and may have an effect on possible future expansion plans.

(4) Construction activities or increased truck traffic will possibly create a disturbance for campground users in those sites close to the proposed route or to the highway. Temporary relocations may have to be considered, as was done by N.C.P.C. during the construction of the Aishihik power dam.

(5) The location of construction camps close to campgrounds may cause disturbances to users and increased use of the areas with possible adverse environmental effects.

(6) In general, a comprehensive inventory of all areas which have campground day-use and recreation potential is required in order to determine both suitable relocation sites and the impact on possible future development.

Attached is a list of all campgrounds and recreation areas upon which there may be an impact.

Historic Resources.

(1) Although the applicant's Environmental Statement goes into great detail concerning the historic resources, there is very little if any indication of possible impacts and/or protective measures which will be employed. More detail is needed in this area.

(2) The proposed location of any crossing of the Yukon River will be of major importance. This portion of the International Gold Rush Park will be investigated in detail over the next two years and in all likelihood a co-operative development/management agreement between Parks Canada and YTG will be formalized.

Recreation Potentials

An almost total lack of inventory data, other than the Land Use Information Series, prevents us from making anything but the most general statements concerning possible impacts on potential recreation areas.

It is known that the recreation potential in Shikwak Trench, particularly Kluane Lake and adjacent to Kluane National Park, Marsh Lake, Squanga Lake and Teslin Lake areas is generally rated high. However, there is insufficient data at present to project possible future developments and for outdoor recreation uses. A study of these requirements is a necessary prerequisite to final pipeline design.

Other aspects of land use along the pipeline route, some related to parks and recreation, are also of concern. These briefly are as follows:

(1) Borrow areas. These must be selected on a site-specific basis previous to the start of construction, and their use approved. This must be done

as part of phase two of these hearings, and must be related to highway needs, particularly in the area of the Shakwak Project reconstruction.

It should be noted that reserves are held on certain pits along the Alaska Highway and the Haines Road for highway maintenance and construction purposes, and many other potential gravel areas have been identified by the federal Department of Public Works.

(2) Mining claims. The status of mining claims or areas of mining potential along the route should be determined particularly in the Whitehorse Copper vicinity. Foothills have agreed to avoid conflict with areas of "present and future mining potential" - those words are theirs - or provide "appropriate" compensatory measures. These should be better defined.

(3) Built-up areas. Foothills' stated policy in these areas needs clarification, in such areas as the pipeline, and I quote: "Will maintain an adequate distance from all built up areas" - end of quote. What is an adequate distance?

(4) Grazing leases, et cetera. In non-built-up areas, all specific land uses, surveyed lots, et cetera, must be identified. If they cannot be avoided compensation must be available.

(5) Access roads. Applications for access road routing, campsite location, and similar

construction activities must be made well in advance of their construction in order that their possible impacts may be assessed, particularly in relation to the opening up of previously inaccessible areas.

(6) Existing facilities.

Requirements to expand existing facilities such as airstrips must be addressed, as well as the question of synchronization with the Shakwak project.

This brief list has strayed in some measure rather far from parks and recreation, but land use is an integral part of such a program, and a peg on which to hang related concerns. More of these, in the gray area between environmental and socio-economic matters, will be addressed to the Lysyk Inquiry. Meanwhile, thank you for the opportunity to present this material, even if in very abbreviated form.

MR. CHAIRMAN: Thank you very much. Before we break, we'll await Mr. Wright before we get into questions. I usually ask if there's anyone in the audience would like to address anything to the panel on any subject. Is there anyone here today who would wish to do so?

Okay, then we'll have a break and see if we can find Mr. Wright.

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: Since Mr. Wright isn't here, I would suggest that people who have questions of Mr. Wright that they be put in writing to our Secretary and he will pass them along to Mr. Wright, and we'll make the answers available.

Mr. Bouckhout would you like to make a statement on the contents of the brief?

MR. BOUCKHOUT: Yes, sir. Just a very brief statement. We have, in fact, consulted with the Parks and Historic Sites Division, as we have, for instance, with the Game Management Division, and various other both Federal and Yukon Territorial Governments on various matters dealing with their particular disciplines.

There is a comment, for instance, on page three relative to study requirements necessary, prerequisites to final pipeline design. This is in fact I believe, in reference to recreation capability and this is precisely one of the study topics we have discussed with the relevant government agency, and are currently assessing a proposal to do in fact, just that; to undertake a recreation capability assessment along the proposed pipeline route which would be appropriate here.

With respect to the distances given on the chart, and some of the conclusions drawn from the chart; I'm not really sure which map may have been used

to get these distances. They don't, in all cases, correspond with the ones we have. For instance, we don't pass through the campground at Pine Lake. We are, in fact, south of it. But in any respect we would obviously in detailed location avoid campsites; we would obviously not place a line through it at existing or planned campsite areas. This would obviously be avoided.

Those are the only comments I have. We certainly recognize the implications of land use, recreation, and aesthetic considerations, which we view as a group of topics which are very -- highly interrelated. In a corridor, such as we're speaking of, being the Alaska Highway corridor, we certainly recognize the implications of recreation and tourism to the Yukon economy and to the corridor specifically, and we view it as a very important topic.

MR. CHAIRMAN: Thank you.

MR. TREVOR: Mr. Bouckhout, I think we'll have to refer to your detailed alignment to determine whether indeed you are correct about Pine Creek. We feel that it does pass right through the middle of the campground. However, be that as it may, may I ask you in the case that the route passes through a campground or very close thereto, and I was speaking in terms of yards, would it be the policy of your company, assuming that you had permission to build a pipeline, to in cases of that nature, to prior to

Mr. B. Trevor
Mr. L. Bouckhout
Dr. O. Hughes

643

construction starting, to establish an alternate campground at another suitable location at the expense of the company, rather than the expense of the Government?

MR. BOUCKHOUT: This is a matter which would have to be viewed on site-specific basis. If in fact we were to construct our line in an area where there is an existing campground, then that construction were to preclude use of that campground, then certainly, that's something that would -- that could be done, and would be done. Based on consultation with the appropriate authorities and an agreement made in that instance. Something that's -- it would obviously have to be dealt with in consultation with the appropriate authorities to see what was in fact necessary in those areas.

MR. TREVOR: Thank you.

MR. CHAIRMAN: Mr. Hughes?

DR. HUGHES: Well, now, am I to understand that from what you've just said and from the fact that the line, as drawn, does go through three campgrounds, that the camp -- that that line was drawn through the campgrounds, either quite by accident, or because of lack of knowledge of the existence of the campground, or was it a decision of your pipeline engineers that all other things considered, it was necessary to go through that campground?

MR. BOUCKHOUT: Dr. Hughes, I assure you, it was quite by accident. There was no design

by our engineers to in fact go through that campground. Obviously, our preference, and I'm sure in all cases, it would be possible to avoid such campgrounds and avoid them by an appropriate distance.

If you were to look at the environmental atlas, for instance the scale of the atlas is 1 to 250,000; the line shown on the atlas is quite broad and we have always viewed that line as being relatively mobile. For instance, if a point on the 1 to 250,000 map indicated a campground and the line were to pass through that indication, that did not necessarily to us at that scale construe that we would necessarily go through that campground. What will be done as we proceed into more detailed planning, is that not only will our recreation and land use consultants be involved, but also someone akin to or specifically a land man, who will define the precise land use along the designated route, and then that very precise information will be taken into account in any required refinement in the line. We can speak of campgrounds, we can speak of private holdings, of private lots and so on, these are all things that as you proceed in the more detailed planning with respect to the precise line that you must confront in refining the line to avoid such locations.

DR. HUGHES: Yes, I might say though, that on the -- we were, as we drove the highway, we were using the alignment sheets which are on their photographs

and I recall, for instance, in the particular case of Morley River, it's quite clear that the line is drawn between the campground, right through the campground between the highway and the river, rather than on the opposite side of the road, for instance.

MR. BOUCKHOUT: Yes, that's quite possible, Dr. Hughes. As I said, in refinement of the line under very site-specific detail, that would obviously be moved. The people, and I'm speaking particularly of our drafting department, who put the line on the photomosaics didn't in all cases have the precise data and on the mosaics in some cases, a campground may not have shown up, and therefore wasn't avoided when the line was put on. Certainly, we will have the very site-specific information available when we do refine the line and campgrounds would be avoided and circumstances such as the one you've just mentioned would very much be taken into account, and the line located adequately to avoid conflict with the campground.

DR. HUGHES: Could you tell me what ordinarily, in construction in southern Canada, at what point in the process of application do you prepare detailed -- does your line department prepare detailed maps showing facilities, land ownership, all this sort of information? How would that apply in this case?

MR. BOUCKHOUT: To my knowledge, sir, that is something that is done basically during the

detailed final design process. It obviously depends upon the project you're speaking of, whether you're speaking of simply a looping project of a very short length, or if you're speaking of, for instance, say a short twenty mile segment, or you're speaking of a major program in a new area. But that would characteristically be done during the detailed phase, because that's when a lot of these other considerations come in as well. By other considerations, I mean such things as geotechnical information, which becomes then very site-specific, and in some cases may warrant refinement of the route for that purpose. The very detailed information is input throughout the final design stage.

At present, in the preliminary design phase, which we are speaking of here, and we do have site-specific detail which is taken into account, and obviously is then -- well it's taken into account at this stage, but there is much more detailed information which is being gathered now, and will continue to be gathered. As that becomes available, then it's input into the more detailed development of the line and of the construction program and so in, in general.

DR. HUGHES: If the Chairman will allow me to just stray off the point, but it's relevant a bit to what we've been saying now, as this also explains some very peculiar little anomalies of the location, for instance, we know that just this side of Slims River that the

pipeline goes up a steep conical bedrock hill, right up to the top of it, and right back down. Is that a slip of the draftsman pen here? You see, in some cases we find it difficult to distinguish between what was done deliberately and what was done by a slip of a pen. I have found concern, for instance, in our community hearings from -- we've had comments well that goes practically through my back yard.

We can be sympathetic perhaps understanding that in transfer from a 1 to 250,000 map by a draftsman to photomosaic that this sort of thing can be overlooked, but I don't think you can expect quite the same sympathy from the person who owns the particular cabin.

MR. BOUCKHOUT: Yes, Dr. Hughes, again, the same applies, that the point I mentioned earlier about the very detailed assessment of land use along the line which is done by a land man or someone like that in conjunction with other specialists such as recreation specialists and so on. Another phase in this process you mentioned something about a topographic anomaly or the next phase in planning the process is to prepare detailed orthophotomosaics. These are then used as the next phase in the process of getting more into details of slopes and avoiding steep slopes, or avoiding potentially unstable slopes and so on. Obviously, the photomosaics, good as they are, are still not as good as very detailed, corrected, orthophotomosaics. This again, is another phase. As I say,

and I've said several times, in fact, that there is on a refinement basis, considerable flexibility in the final detailing of this route. I think it's been mentioned before that it's quite conceivable that as more information is gained, as the route is further evaluated on a site-specific basis, that it may very well deviate up to several thousand feet perhaps one way and another and so on to avoid the very site-specific issues which you have just brought up.

Really, what we're looking at at this stage, are more major deviations where we're talking about something like the Whitehorse alignment, for instance. Alternatives, potential alternatives to the existing Whitehorse alignment, the Ibex Creek alignment. This is the major difference and a major realignment. But what we're speaking of here, I think, in general, are more very detailed refinements rather than major relocations, and these refinements will come about as planning proceeds.

DR. HUGHES: Right. Thank you very much.

MR. CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: The Ibex Pass has sort of been identified as somewhat of an issue where you have alternatives around that. Then I see you have Mr. Taylor sitting with you. I was wondering, are we going to be -- have you, or are we going to be supplied with information on the recreational potential and also the existing recreational

Mr. L. Chambers
Mr. L. Bouckhout
Mr. J. Taylor

649

1 use of that Jackson-Louise Lake, which is located off the
2 Fish Lake road, near the Ibex Pass in close conjunction with
3 the campsite, construction campsite, as well as your proposed
4 route?

5 MR. BOUCKHOUT: Mr. Chambers,
6 I will ask Mr. Taylor to respond to this in just a moment.
7 As I mentioned, one thing -- one study we are considering
8 now, is recreation potential study, and in particular,
9 with that would be the implications of the Whitehorse align-
10 ment since that's very important with respect to recreation
11 potential.

12 Again, we have been discussing
13 with other government agencies potential co-ordination of
14 these various studies, such as land use studies, as opposed
15 to recreational potential studies and so on, and it's my
16 understanding that more detailed land use studies are now
17 proceeding and being undertaken by various government agencies
18 and therefore, we would opt to concentrate more on something
19 that's not currently being done. Since we assume that the
20 information generated from a land use study would be made
21 available to us.

22 I'd like to have Mr. Taylor to
23 comment just a bit more on the Ibex Pass - Jackson Lakes area.

24 MR. TAYLOR: With respect to
25 doing detailed recreation potential studies, we have suggested
26 to Foothills that in situations where there are alternatives,

such as either Ibex, or moving more northerly around Whitehorse, it would be useful to undertake a more detailed evaluation, so that comparisons can be made.

This is, in our view, and particularly important where there are options. Now there are areas where it seems fairly obvious that the highway route has the least impact and is most desirable. In those cases, doing extensive recreation potential studies may be a bit academic, but that is an area that we feel further work would be required before a final decision is made.

MR. CHAIRMAN: Dr. Hughes?

DR. HUGHES: Have you had an opportunity to examine any of the planning documents for the Mackenzie Highway, and if so, are you familiar with their -- the proposal there to design the layout of construction camps in such a way that they will following abandonment, following construction, that they would be amenable to future use as campgrounds, and have you considered that possibility in design of -- or anything, from any of your various kinds of construction camps, storage sites and so forth?

MR. TAYLOR: In the case of borrow pits related to the Mackenzie Highway, the firm that I am with, in fact, was involved with some of the rehabilitation studies in that area. The difference between Mackenzie Valley, of course, and what appears to be the situation here on the Alaska route, is that Foothills is proposing to use existing

Mr. J. Taylor
Dr. O. Hughes
Mr. L. Bouckhout

651

borrow pits in most cases, rather than opening up new areas. So, in the case of Mackenzie it seemed very desirable to come up with a comprehensive scheme in terms of shaping and where appropriate, and we're relating closely to the road, with desirable amenities to develop a comprehensive scheme.

Now here along the Alaska Highway, a lot of the work has already been done without really that in mind, so in some cases it might be a bit difficult to redirect those forms into a recreation use. Also, of course, many of the areas here will be required for continual highway maintenance.

DR. HUGHES: I wasn't thinking so much of the borrow pits as the campsites. As you may have noticed, Alaska Highway campsites in many cases have sort of gradually become some sort of campgrounds in many instances, and the same is true along the Klondike Highway, where openings have been made for construction camp sites, they had some further use, and it seems to me that with proper choice and design of camp sites, they might -- those areas then instead of being just a problem for rehabilitation might be an asset for recreation.

MR. BOUCKHOUT: Dr. Hughes, I might initially respond to that, and perhaps Mr. Taylor would add something to that.

I have on several occasions mentioned and primarily with respect to such things as borrow

1 sites and so on, that the ultimate design and rehabilitation
2 of such sites, and this would include campsites as well,
3 is partially dependent on what potential future use could
4 be made of those sites, in fact, is a possibility.

5 With respect to major mainline
6 camps, it might be a bit more difficult, particularly
7 because we're talking about very large camps. We're
8 talking seven to eight hundred man camps with relatively
9 small camps dealing with far fewer units, far fewer people,
10 you're much -- it's much easier to design the camp so that
11 absolute clearing of the pad area and so on is not necessary.
12 In other words, the various living units can be blended into
13 a complex so that there is still vegetation within the
14 complex.

15 In terms of the manageability
16 of a very large camp, when we're discussing something in the
17 order of seven to eight hundred man camps, that may very well
18 not be as possible because of management problems which might
19 relate to that. It certainly could be looked into as a
20 possibility, but as I say, in terms of a camp of that
21 magnitude, then you have to look at the implications for
22 the proper running and maintenance of the camp itself.

23 DR. HUGHES: Right, I understand
24 there may well be problems. I just wanted to know to what
25 extent this might have entered your planning process.

26 MR. CHAIRMAN: Any other questions

on the substance of the brief? Dr. Schilder?

DR. SCHILDER: Mr. Chairman, I have a question for the Foothills representative. Unfortunately I cannot find out precisely the intentions and interests of the intervenor, but it seems to me that within his brief it's clearly implied his concerns over recreation areas and these properties, and recreation activities. It seems to me that there is also an implication which I can interpret within the context of the whole briefing about a potential conflict with various water uses.

I could see that potential conflict in connection with construction camps along the proposed pipeline in general. Specifically, the appendix of the briefing contains at least one more specific reference which I was able to identify, Sulpher Lake, which seems to have a campground, and unless I'm mistaken Sulpher Creek, above this Lake is being proposed within the existing submission for one of the potential construction camps.

Would the applicant be prepared to review all the relevant interests of the intervenor's -- of the intervenor to find out whether these potential conflicts in general of the proposed campgrounds -- I'm sorry, construction camps?

MR. BOUCKHOUT: Dr. Schilder, when we undertake to look at the proposed campground sites in detail, that certainly would be a consideration. That's

one of the many elements which must be included in the consideration of the suitability of a particular campsite location. That certainly would be taken into account when the final locations are established.

DR. SCHILDER: Thank you.

MR. CHAIRMAN: Any more questions?

Persons from the floor? Yes?

MR. CRUM: My name is Russ Crum. I think it's unfortunate for the panel and for the public here that Mr. Wright was not able to attend. I would hope that the concerns of the Y.T.G. Government are not in any way expressed by Mr. Wright's absence seeing as tourism is undoubtedly one of the major industries in the Yukon Territory, and I would suggest that they have a great interest in the outcome of this hearing, and it's potential impact on the tourist industry.

I have one question for Mr. Bouckhout, however, it may be in the policy nature and he may wish to refer it to Mr. Blair when he attends further, but I would be interested to know Foothills' policy with respect to compensation for any potential impacts on the tourist industry in the Yukon?

MR. BOUCKHOUT: That certainly is a policy issue. It's an issue which I believe is intended to be addressed by Mr. Blair, particularly before the socio-economic inquiry, the Lysyk Inquiry. You'll

appreciate that when one begins to deal with matters such as tourism and recreation and land use, one is immediately very much in the overlap zone of environment as opposed to socio-economic matters.

This matter, in terms of compensation, has been treated by the socio-economic group in this area, and I would like to, with your permission, defer that to that --- to Mr. Blair's testimony before that Inquiry.

MR. CHAIRMAN: Do you know what he said? What was the thrust of the policy, or can you refer us to a day that he said it on.

MR. BOUCKHOUT: I don't know exactly the day, Dr. Hill, but I will undertake to find that out for you and give you an indication.

I could, for instance, provide at a later date in written form or in verbal form the stated policy for this Inquiry, if that's applicable.

MR. CHAIRMAN: If you would please.

Any more questions or comments from the floor? Okay, are there any comments from the floor off the subject of the brief?

Okay, then I'll adjourn the meeting, the panel will be reconvening on July 5th to look at particular issues.

There will be an announcement of the issues in the timetable for consideration of those issues towards the middle of next week. We will be scheduling the issues probably starting from the physical parameters to the wildlife and so on, on the Alaska Highway proposal per se, and then we will go on to the alternatives within the Yukon and finally, look at those -- look where we can learn from the material from the Mackenzie Valley Pipeline Application.

So, these will be put out to the press, is it Brian, by mid week.

Thank you very much for your participation.

(PROCEEDINGS ADJOURNED)

343.093

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343.093
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Vol. 4

